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Number 61 of a series of photographs of past presidents of the Association.



Arthur J. Jones

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NUMBER ONE

PROGRESS TOWARDS ECONOMIC STABILITY*

By ARTHUR F. BURNS

The American people have of late been more conscious of the business cycle, more sensitive to every wrinkle of economic curves, more alert to the possible need for contracyclical action on the part of government, than ever before in our history. Minor changes of employment or of productivity or of the price level, which in an earlier generation would have gone unnoticed, are nowadays followed closely by laymen as well as experts. This sensitivity to the phenomena of recession and inflation is a symptom of an increased public awareness of both the need for and the attainability of economic progress. It is precisely because so much of current industrial and governmental practice can be better in the future that our meetings this year are focused on the broad problem of improving the performance of the American economy. However, as we go about the task of appraisal and criticism, it will be well to discipline our impatience for reform. In the measure that we avoid exaggerating our nation's failures or understanding its successes, we shall make it easier for ourselves as well as for economists in other countries to see current needs and developments in a just perspective.

It is a fact of the highest importance, I think, that although our economy continues to be swayed by the business cycle, its impact on the lives and fortunes of individuals has been substantially reduced in our generation. More than twenty-five years have elapsed since we last experienced a financial panic or a deep depression of production and employment. Over twenty years have elapsed since we last had a severe business recession. Between the end of the second world war and the present, we have experienced four recessions, but each was a relatively

* Presidential address delivered at the Seventy-second Annual Meeting of the American Economic Association, Washington, D.C., December 28, 1959. The author is indebted to his colleagues—M. Abramovitz, S. Fabricant, M. Friedman, Jane Kennedy, L. Wolman, and especially G. H. Moore—for counsel and criticism in the preparation of this paper.

mild setback. Since 1937 we have had five recessions, the longest of which lasted only 13 months. There is no parallel for such a sequence of mild—or such a sequence of brief—contractions, at least during the past hundred years in our own country.

Nor is this all. The character of the business cycle itself appears to have changed, apart from the intensity of its over-all movement. We usually think of the business cycle as a sustained advance of production, employment, incomes, consumption, and prices, followed by a sustained contraction, which in time gives way to a renewed advance of aggregate activity beyond the highest levels previously reached. We realize that changes in the price level occasionally outrun changes in production, that employment is apt to fluctuate less than production, and that consumption will fluctuate still less; but we nevertheless think of their movements as being roughly parallel. This concept of the business cycle has always been something of a simplification. For example, during the early decades of the nineteenth century, when agriculture dominated our national economy, occasional declines in the physical volume of production, whether large or small, had little effect on the number of jobs and sometimes had slight influence even on the flow of money incomes. As agriculture diminished in importance, the nation's production, employment, personal income, consumption, and price level fell more closely into step with one another and thus justified our thinking of them as moving in a rough parallelism. In recent years, however, and especially since the second world war, the relations among these movements have become much looser.

The structure of an economy inevitably leaves its stamp on the character of its fluctuations. In our generation the structure of the American economy has changed profoundly, partly as a result of deliberate economic policies, partly as a result of unplanned developments. In considering problems of the future, we can proceed more surely by recognizing the changes in economic organization which already appear to have done much to blunt the impact of business cycles.

I

In the early decades of the nineteenth century the typical American worker operated his own farm or found scope for his energy on the family farm. Governmental activities were very limited. What there was of industry and commerce was largely conducted through small firms run by capitalist-employers. Corporations were rare and virtually confined to banking and transportation. As the population grew and capital became more abundant, individual enterprise expanded vigorously but corporate enterprise expanded still more. An increasing part of the nation's business therefore came under the rule of corporations.

By 1929, the output of corporate businesses was already almost twice as large as the output of individual proprietorship and partnerships. The gap has widened appreciably since then. Corporate profits have therefore tended to increase faster than the incomes earned by proprietors, who still remain very numerous in farming, retail trade, and the professions. Fifty years ago the total income of proprietors was perhaps two and a half times as large as the combined sum of corporate profits and the compensation of corporate officers. By 1957 this corporate aggregate exceeded by a fourth the income of all proprietors and by two-thirds the income of proprietors outside of farming.

The great growth of corporations in recent decades has occurred preponderantly in industries where the firm must operate on a large scale to be efficient and therefore must assemble capital from many sources. But a corporation whose stock is held publicly and widely has a life of its own, apart from that of its owners, and will rarely distribute profits at the same rate as they are being earned. While profits normally respond quickly and sharply to a change in sales and production, the behavior of dividends is tempered by business judgment. In practice, dividends tend to move sluggishly and over a much narrower range than profits. Corporations have therefore come to function increasingly as a buffer between the fluctuations of production and the flow of income to individuals. In earlier times the lag of dividends was largely a result of the time-consuming character of corporate procedures. More recently, the advantages of a stable dividend—especially its bearing on a firm's financial reputation—have gained increasing recognition from business managers. Meanwhile, modern trends of taxation have stimulated corporations to rely more heavily on retained profits and less on new stock issues for their equity funds, and this development in turn has facilitated the pursuit of stable dividend policies. Thus the evolution of corporate practice, as well as the growth of corporate enterprise itself, has served to reduce the influence of a cyclical decline of production and profits on the flow of income to individuals.

The expansion and the means of financing of governmental enterprise, especially since the 1930's, have had a similar effect. The increasing complexity of modern life, a larger concept of the proper function of government, and the mounting requirements of national defense have resulted in sharp increases of governmental spending. Fifty years ago the combined expenditure of federal, state, and local governments was about 7 per cent of the dollar volume of the nation's total output. Governmental expenditures rose to 10 per cent of total output in 1929 and to 26 per cent in 1957. This huge expansion of governmental enterprise naturally led to increases in tax rates and to an energetic search for new sources of revenue. In time, taxes came to be imposed on estates,

gifts, employment, sales, and—most important of all—on the incomes of both corporations and individuals. Fifty years ago customs duties still yielded about half of the total revenue of the federal government, and none of our governmental units as yet collected any tax on incomes. Twenty years later, personal and corporate income taxes were already the mainstay of federal finance. Subsequently, the activities of the federal government increased much faster than local activities and taxes followed suit. By 1957 the income tax accounted for nearly 70 per cent of federal revenue, 8 per cent of state and local revenue, and a little over half of the combined revenue of our various governmental units.

This dominance of the income tax in current governmental finance, together with the recent shift of tax collection toward a pay-as-you-go basis, has measurably enlarged the government's participation in the shifting fortunes of the private economy. During the nineteenth century, taxes were not only a much smaller factor in the economy, but such short-run elasticity as there was in tax revenues derived almost entirely from customs duties. Hence, when production fell off and private incomes diminished, the accompanying change in governmental revenues was usually small. In recent years, however, governmental revenues have become very sensitive to fluctuations of business conditions. When corporate profits decline by, say, a billion dollars, the federal government will collect under existing law about a half billion less from corporations. When individual incomes decline by a billion, the federal government may be expected to collect about \$150 million less from individuals. State income taxes accentuate these effects. In short, when a recession occurs, our current tax system requires the government to reduce rather promptly and substantially the amount of money that it withdraws from the private economy for its own use. The result is that the income from production which corporations and individuals have at their disposal declines much less than does the national income.

Moreover, the operations of government are now so organized that the flow of personal income from production is bolstered during a recession by increased payments of unemployment insurance benefits. Unemployment insurance was established on a national basis in 1935, and the protection of workers against the hazards of unemployment has increased since then. Not all employees are as yet covered by unemployment insurance and the benefits, besides, are often inadequate to provide for essentials. Nevertheless, there has been a gradual improvement in the ability of families to get along decently even when the main breadwinner is temporarily unemployed. At present, over 80 per cent of those who work for a wage or salary are covered by unemployment insurance, in contrast to 70 per cent in 1940. The period over

which benefits can be paid to an unemployed worker has become longer and the typical weekly benefit has risen in greater proportion than the cost of living. Furthermore, arrangements have recently been concluded in several major industries whereby benefits to the unemployed are supplemented from private sources.

Other parts of the vast system of social security that we have devised since the 1930's have also served to support the flow of personal income at times when business activity is declining. Payments made to retired workers kept increasing during each recession of the postwar period. The reason is partly that workers handicapped by old age or physical disability experience greater difficulty at such times in keeping their jobs or finding new ones and therefore apply for pensions in somewhat larger numbers. Another factor has been the intermittent liberalization of statutory benefits. But the most important reason for the steady increase of old-age pensions is the maturing of the social security system. In 1940, only 7 per cent of people of age 65 and over were eligible for benefits from the old-age insurance trust fund, in contrast to 23 per cent in 1948 and 69 per cent in 1958. The trend of other public pension programs and the various public assistance programs has also been upward. Between 1929 and 1957 the social security and related benefits paid out by our various governmental units rose from 1 per cent of total personal income to 6 per cent. In 1933, with the economy at a catastrophically low level, these benefit payments were merely \$548 million larger than in 1929. On the other hand, in 1958—when business activity was only slightly depressed—they were \$4.4 billion above the level of 1957. Even these figures understate the difference between current conditions and those of a quarter century ago, for they leave out of account the private pensions which are beginning to supplement public pensions on a significant scale.

As a result of these several major developments in our national life, the movement of aggregate personal income is no longer closely linked to the movement of aggregate production. During the postwar period we have had several brief but sizable setbacks in production. For example, in the course of the recession of 1957-58, the physical output of factories and mines fell 14 per cent, the physical output of commodities and services in the aggregate fell 5.4 per cent, and the dollar volume of total output fell 4.3 per cent. In earlier times personal incomes would have responded decisively to such a decline in production. This time the government absorbed a substantial part of the drop in the dollar volume of production by putting up with a sharp decline of its revenues despite the need to raise expenditures. Corporations absorbed another part of the decline by maintaining dividends while their un-

distributed profits slumped. In the end, the aggregate of personal incomes, after taxes, declined less than 1 per cent and the decline was over before the recession ended.

Although the details have varied from one case to the next, a marked divergence between the movements of personal income and production has occurred in each of the postwar recessions. Indeed, during 1953-54, the total income at the disposal of individuals defied the recession by continuing to increase. This unique achievement was due to the tax reduction that became effective soon after the onset of recession as well as to the structural changes that have reduced the dependence of personal income on the short-run movements of production.

II

When we turn from personal income to employment, we find that the imprint of the business cycle is still strong. During each recession since 1948, unemployment reached a level which, while decidedly low in comparison with the experience of the 'thirties, was sufficient to cause serious concern. But although the fluctuations of employment have continued to synchronize closely with the movements of production, the relation between the two has been changing in ways which favor greater stability of employment in the future.

As the industrialization of our economy proceeded during the nineteenth century, an increasing part of the population became exposed to the hazards of the business cycle. Manufacturing, mining, construction, freight transportation—these are the strategic industries of a developing economy and they are also the industries in which both production and jobs have been notoriously unstable. Shortly after the Civil War, the employees attached to this cyclical group of industries already constituted 23 per cent of the labor force. Employees of industries that have remained relatively free from cyclical unemployment—that is, agriculture, merchandising, public utilities, financial enterprises, the personal service trades, and the government—accounted for another 32 per cent. The self-employed in farming, business, and the professions, whose jobs are especially steady, made up the rest or 45 per cent of the work force. This was the situation in 1869. Fifty years later, the proportion of workers engaged in farming, whether as operators or hired hands, had shrunk drastically, and this shrinkage was offset only in part by the relative gain of other stable sources of employment. Consequently, the proportion of employees in the cyclical industries kept rising, decade after decade, and reached 36 per cent in 1919.

Clearly, the broad effect of economic evolution until about 1920 was to increase the concentration of jobs in the cyclically volatile industries, and this was a major force tending to intensify declines of employment

during business contractions. Since then, the continued progress of technology, the very factor which originally was mainly responsible for the concentration in the cyclical industries, has served to arrest this tendency. The upward trend of production in manufacturing and the other highly cyclical industries has remained rapid in recent decades. However, advances of technology have come so swiftly in these industries as well as in agriculture that an increasing part of the nation's labor could turn to the multitude of tasks in which the effectiveness of human effort improves only slowly, where it improves at all. Thus the employees of "service" industries constituted 24 per cent of the labor force in 1919, but as much as 44 per cent in 1957. The proportion of self-employed workers in business and the professions, which was 9.4 per cent in the earlier year, became 10.6 per cent in the later year. True, these gains in types of employment that are relatively stable during business cycles were largely canceled by the countervailing trend in agriculture. Nevertheless, the proportion of employees attached to the cyclically volatile industries has not risen since 1919. Or to express this entire development in another way, the proportion of workers having rather steady jobs, either because they work for themselves or because they are employed in industries that are relatively free from the influence of business cycles, kept declining from the beginning of our industrial revolution until about 1920, and since then has moved slightly but irregularly upward.

Thus, the changing structure of industry, which previously had exercised a powerful destabilizing influence on employment and output, particularly the former, has ceased to do so. The new stabilizing tendency is as yet weak, but it is being gradually reinforced by the spread of "white-collar" occupations throughout the range of industry. For many years now, the proportion of people who work as managers, engineers, scientists, draftsmen, accountants, clerks, secretaries, salesmen, or in kindred occupations has been increasing. The white-collar group, which constituted only 28 per cent of the labor force outside of agriculture in 1900, rose to 38 per cent in 1940 and to 44 per cent in 1957. Workers of this category are commonly said to hold a "position" rather than a "job" and to be paid a "salary" rather than a "wage." Hence, they are often sheltered by a professional code which frowns upon frequent firing and hiring. Moreover, much of this type of employment is by its nature of an overhead character and therefore less responsive to the business cycle than are the jobs of machine operators, craftsmen, assembly-line workers, truck drivers, laborers, and others in the "blue-collar" category. For example, during the recession of 1957-58, the number of "production workers" employed in manufacturing, who approximate the blue-collar group, declined 12 per cent, while the employ-

ment of "nonproduction workers," who approximate the white-collar group, declined only 3 per cent. This sort of difference has been characteristic of recessions generally, not only the most recent episode, and on a smaller scale it has also been characteristic of industry generally, not only of manufacturing.

It appears, therefore, that changes in the occupational structure of the labor force, if not also in the industrial structure, have been tending of late to loosen the links which, over a considerable part of our economic history, tied the short-run movement of total employment rather firmly to the cyclical movement of total production, and especially to the cyclical movement of its most unstable parts—that is, the activities of manufacturing, mining, construction, and freight transportation. This stabilizing tendency promises well for the future, although up to the present it has not left a mark on records of aggregate employment that is comparable with the imprint that the stabilizing influences we discussed previously have left on personal income. In the postwar period, as over a longer past, the number of men and women at work, and even more the aggregate of hours worked by them, has continued to move in fairly close sympathy with the fluctuations of production.

We can no longer justifiably suppose, however, when employment falls 2 million during a recession, as it did between July 1957 and July 1958, that the number of people who receive an income has declined by any such figure. In fact, the number of workers drawing unemployment insurance under the several regional plans rose about 1.3 million during these twelve months, while the number of retired workers on public pensions rose another million. Hence, it may be conservatively estimated that the number of income recipients increased over 300 thousand despite the recession. In the other postwar recessions our experience was fairly similar. In other words, as a result of some of the structural changes on which I dwelt earlier, the size of the income-receiving population has grown steadily and escaped cyclical fluctuations entirely.¹

III

Turning next to consumer spending, we must try once again to see recent developments in historical perspective. The fact that stands out is that the impact of business cycles on consumption has recently diminished, while the effects of consumption on the business cycle have become more decisive.

In the classical business cycle, as we came to know it in this country,

¹ This upward trend would appear steeper than I have suggested if recipients of property income and of public assistance were included in the count. In the present context, however, it has seemed best to restrict the income-receiving population to the working class, or more precisely, to members of the labor force or those recently in the labor force who receive an income as a matter of right and on some regular basis.

once business investment began declining appreciably, a reduction of consumer spending soon followed. Sometimes the expansion of investment culminated because the firms of one or more key industries, finding that their markets were growing less rapidly than had been anticipated, made an effort to bring their productive capacity or inventories into better adjustment with sales. Sometimes the expansion culminated because the belief grew that construction and financing costs had been pushed to unduly high levels by the advance of prosperity. Sometimes it culminated for all these or still other reasons. But whatever the cause or causes of the decline in investment, it made its influence felt over an increasing area of the economy. For a while consumer spending was maintained at a peak level or even kept rising. But since businessmen were now buying on a smaller scale from one another, more and more workers lost their jobs or their overtime pay, financial embarrassments and business failures became more frequent, and uncertainty about the business outlook spread to parts of the economy in which sales and profits were still flourishing. If some consumers reacted to these developments by curtailing their spending in the interest of caution, others did so as a matter of necessity. Before long, these curtailments proved sufficient to bring on some decline in the aggregate spending of consumers. The impulses for reducing business investments therefore quickened and the entire round of events was repeated, with both investment and consumption declining in a cumulative process.

As the contraction continued, it tried men's patience, yet in time worked its own cure. Driven by hard necessity, business firms moved with energy to reduce costs and increase efficiency. Consumers whose incomes were declining often saved less or dissaved in order not to disrupt their customary living standards. Hence, even if sales and prices were still falling, profit margins improved here and there. In the meantime, bank credit became more readily available, costs of building and terms of borrowing became more favorable, the bond market revived, business failures diminished, and the investment plans of innovators and others began expanding again. When recovery finally came, it was likely to be led by a reduced rate of disinvestment in inventories or by a new rush to make investments in fixed capital. At this stage of the business cycle, consumer spending was at its very lowest level, if not still declining.

Many of these features of earlier business cycles have carried over to the present. However, the behavior of consumers in the postwar recessions has departed from the traditional pattern in two respects. In the first place, consumers maintained their spending at a high level even after business activity had been declining for some months, so that the tendency of recessions to cumulate was severely checked. During the

recession of 1945 consumer spending actually kept increasing. In each of the later recessions it fell somewhat; but the decline at no time exceeded one per cent and lasted only a quarter or two. In the second place, instead of lagging at the recovery stage of the business cycle, as it had in earlier times, consumer spending turned upward before production or employment resumed its expansion. This shift in cyclical behavior appears clearly in department store sales, which have been recorded on a substantially uniform basis for several decades and are widely accepted as a tolerably good indicator of consumer spending. In the recoveries of 1921, 1924, 1927, and 1938, these sales lagged by intervals ranging from two to four months. In 1933 their upturn came at the same time as in production and employment. It thus appears that, during the 1920's and 1930's, consumer spending in no instance led the economy out of a slump. In the postwar period, on the other hand, department store sales have led successive recoveries by intervals stretching from two to five months. Of course, department store sales cover only a small fraction of consumer expenditure, and correction for price changes would alter their historical record somewhat. But the main features of the cyclical behavior of dollar sales by department stores are broadly confirmed by other evidence on consumer spending, which is extensive for recent years. We may therefore conclude with considerable assurance that consumer spending has played a more dynamic role in recent times. Not only have consumers managed their spending during recessions so that the cumulative process of deflation has been curbed, but consumer spending has emerged as one of the active factors in arresting recession and hastening recovery.

This new role of the consumer in the business cycle reflects some of the developments of the postwar period that we considered earlier, particularly the greatly enhanced stability in the flow of personal income, the steady expansion in the number of income recipients, and the relative increase in the number of steady jobs. It reflects also the improvements of financial organization and other structural changes which have strengthened the confidence of people, whether acting as consumers or investors, in their own and the nation's economic future. Whatever may have been true of the past, it can no longer be held that consumers are passive creatures who lack the power or the habit of initiating changes in economic activities. There is no harm in thinking of consumer spending as being largely "determined" by past and current incomes, provided we also recognize that the level of current incomes is itself shaped to a significant degree by the willingness of people to work hard to earn what they need to live as they feel they should. The evidence of rising expectations and increased initiative on the part of consumers is all around us. It appears directly in the rapidly

rising proportion of women in the labor force, in the sizable and increasing proportion of men who hold down more than one job, in the slackening of the long-term decline of the average work week in manufacturing despite the increased power of trade unions, as well as indirectly in the improvement of living standards and the great upsurge of population. Indeed, the expansive forces on the side of consumption have been so powerful that we must not be misled by the cyclical responses of consumer spending, small though they were, to which I referred earlier. There are no continuous records of inventories in the hands of consumers; but if such statistics were available, we would almost certainly find that consumption proper, in contrast to consumer spending, did not decline at all during any of the postwar recessions.

In view of these developments in the realm of the consumer, it is evident that the force of any cyclical decline of production has in recent years been reduced or broken as its influence spread through the economy. Production has remained unstable, but the structure of our economy has changed in ways which have limited the effects of recessions on the lives of individuals—on the numbers who receive an income, the aggregate of personal incomes, consumer spending, actual consumption, and to some degree even the numbers employed. It is, therefore, hardly an exaggeration to assert that a good part of the personal security which in an earlier age derived from living on farms and in closely knit family units, after having been disrupted by the onrush of industrialization and urbanization, has of late been restored through the new institutions that have developed in both the private and public branches of our economy.

IV

In concentrating, as I have thus far, on the changes of economic organization which have lately served to reduce the impact of business cycles on the lives of individuals, I have provisionally taken the cyclical movement of production for granted. Of course, if the fluctuations of production had been larger, the impact on people would have been greater. On the other hand, the stabilized tendency of personal income and consumption has itself been a major reason why recent recessions of production have been brief and of only moderate intensity. Many other factors have contributed to this development. Among them are the deliberate efforts made in our generation to control the business cycle, of which I have as yet said little.

In earlier generations there was a tendency for the focus of business thinking to shift from the pursuit of profits to the maintenance of financial solvency whenever confidence in the continuance of prosperity began to wane. At such times experienced businessmen were prone to

reason that it would shortly become more difficult to collect from their customers or to raise funds by borrowing, while they in turn were being pressed by their creditors. Under the circumstances it seemed only prudent to conserve cash on hand, if not also to reduce inventories or accounts receivable. Such efforts by some led to similar efforts by others, in a widening circle. As pressure on commodity markets, security markets, and on the banking system mounted, the decline of business activity was speeded and the readjustment of interest rates, particularly on the longer maturities, was delayed. More often than not the scramble for liquidity ran its course without reaching crisis proportions. Sometimes, however, as in 1873, 1893, and 1907, events took a sinister turn. Financial pressures then became so acute that doubts arose about the ability of banks to meet their outstanding obligations and, as people rushed to convert their deposits into currency, even the soundest banks were forced to restrict the outflow of cash. With the nation's system for making monetary payments disrupted, panic ruled for a time over the economy and production inevitably slumped badly.

It was this dramatic phase of the business cycle that first attracted wide notice and stimulated students of public affairs to seek ways and means of improving our financial organization. The Federal Reserve Act, which became law under the shadow of the crisis of 1907, required the pooling of bank reserves and established facilities for temporary borrowing by banks. The hope that this financial reform would ease the transition from the expanding to the contracting phase of business cycles has been amply justified by experience. But the Federal Reserve System could not prevent the cumulation of financial trouble during business expansions. Nor could it prevent runs on banks or massive bank failures, as the Great Depression demonstrated. The need to overhaul and strengthen the financial system became increasingly clear during the 'thirties and led to numerous reforms, among them the insurance of mortgages, the creation of a secondary market for mortgages, the insurance of savings and loan accounts, and—most important of all—the insurance of bank deposits. These financial reforms have served powerfully to limit the propagation of fear, which in the past had been a major factor in intensifying slumps of production.

But more basic than the financial innovations or any other specific measures of policy has been the change in economic and political attitudes which took root during the 'thirties. The economic theory that depressions promote industrial efficiency and economic progress lost adherents as evidence accumulated of the wreckage caused by unemployment and business failures. The political belief that it was best to leave business storms to blow themselves out lost its grip on men's

minds as the depression stretched out. In increasing numbers citizens in all walks of life came around to the view that mass unemployment was intolerable under modern conditions and that the federal government has a continuing responsibility to foster competitive enterprise, to prevent or moderate general economic declines, and to promote a high and rising level of employment and production. This new philosophy of intervention was articulated by the Congress in the Employment Act of 1946, which solemnly expressed what had by then become a national consensus.

In recent times, therefore, the business cycle has no longer run a free course and this fact has figured prominently in the plans of businessmen as well as consumers. During the 1930's, when the objectives of social reform and economic recovery were sometimes badly confused, many investors suspected that contracyclical policies would result in narrowing the scope of private enterprise and reducing the profitability of investment. These fears diminished after the war as the government showed more understanding of the need to foster a mood of confidence so that enterprise, innovation, and investment may flourish. In investing circles, as elsewhere, the general expectation of the postwar period has been that the government would move with some vigor to check any recession that developed, that its actions would by and large contribute to this objective, and that they would do so in a manner that is broadly consistent with our national traditions. This expectation gradually became stronger and it has played a significant role in extending the horizons of business thinking about the markets and opportunities of the future. The upsurge of population, the eagerness of consumers to live better, the resurgence of Western Europe, the revolutionary discoveries of science, and the steady flow of new products, new materials, and new processes have added impetus to the willingness of investors to expend huge sums of capital on research and on the improvement and expansion of industrial plant and equipment. Some of these influences have also been effective in augmenting public investment. The fundamental trend of investment has therefore been decidedly upward. The private part of investment has continued to move cyclically; but it is now a smaller fraction of total national output and it has displayed a capacity to rebound energetically from the setbacks that come during recessions.

The specific measures adopted by the government in dealing with the recessions of the postwar period have varied from one case to the next. In all of them, monetary, fiscal, and housekeeping policies played some part, with agricultural price-support programs assuming special prominence in one recession, tax reductions in another, and increases of public expenditure in still another. Taking a long view, the most nearly consistent part of contracyclical policy has been in the monetary

sphere. Since the early 1920's, when the Federal Reserve authorities first learned how to influence credit conditions through open-market operations, long-term interest rates have tended to move down as soon as the cyclical peak of economic activity was reached, in contrast to the long lags that were characteristic of earlier times. Since 1948 the decline of long-term interest rates in the early stages of a recession has also become more rapid. This change in the cyclical behavior of capital markets reflects the increased vigor and effectiveness of recent monetary policies. Inasmuch as optimism, as a rule, is still wide spread during the initial stages of an economic decline, a substantial easing of credit, provided it comes early enough, can appreciably hasten economic recovery. This influence is exerted only in part through lower interest rates. Of greater consequence is the fact that credit becomes more readily available, that the money supply is increased or kept from falling, that the liquidity of financial assets is improved, and that financial markets are generally stimulated. The effects of easier credit are apt to be felt most promptly by smaller businesses and the home-building industry, but they tend to work their way through the entire economy. There can be little doubt that the rather prompt easing of credit conditions, which occurred during recent setbacks of production, was of some significance in keeping their duration so short.

Business firms have also been paying closer attention to the business cycle, and not a few of them have even tried to do something about it. These efforts have been expressed in a variety of ways—through the adoption of long-range capital budgets, closer control of inventories, and more energetic selling or some relaxation of credit standards in times of recession. I do not know enough to assess either the extent or the success of some of these business policies. Surely, business investment in fixed capital has remained a highly volatile activity—a fact that is sometimes overlooked by concentrating attention on years instead of months and on actual expenditures instead of new commitments. There is, however, strong evidence that the businessmen of our generation manage inventories better than did their predecessors. The inventory-sales ratio of manufacturing firms has lately averaged about a fourth less than during the 1920's, despite the increased importance of the durable goods sector where inventories are especially heavy. The trend of the inventory-sales ratio has also moved down substantially in the case of distributive firms. This success in economizing on inventories has tended to reduce the fluctuations of inventory investment relative to the scale of business operations and this in turn has helped to moderate the cyclical swings in production. Not only that, but it appears that the cyclical downturns of both inventories and inventory investment have tended to come at an earlier stage of the business cycle in

the postwar period than they did previously, so that any imbalance between inventories and sales could be corrected sooner. Since consumer outlays—and often also other expenditures—were well maintained during the recent recessions of production, the rising phase of inventory disinvestment ceased rather early and this naturally favored a fairly prompt recovery of production.

Thus, numerous changes in the structure of our economy have combined to stimulate over-all expansion during the postwar period and to keep within moderate limits the cyclical declines that occurred in production. Indeed, there are cogent grounds for believing that these declines were even more moderate than our familiar statistical records suggest. The line of division between production for sale and production for direct use does not stand still in a dynamic economy. In the early decades of the industrial revolution an increasing part of our production was, in effect, transferred from the home to the shop and factory. This trend has continued in the preparation of foods, but in other activities it appears on balance to have been reversed. The great expansion of home ownership, the invention of all sorts of mechanical contrivances for the home, longer vacations, the general eagerness for improvement, if not also the income tax, have stimulated many people to do more and more things for themselves. Consumers have become equipped to an increasing degree with the capital goods they need for transportation, for the refrigeration of food, for the laundering of clothes, as well as for entertainment and instruction. They have also been doing, on an increasing scale, much of the carpentry, painting, plumbing, and landscaping around their homes. Such activities of production are less subject to the business cycle than the commercial activities which enter statistical reports. Yet these domestic activities have undoubtedly been expanding rapidly, and perhaps expanding even more during the declining than during the rising phase of the business cycle. Hence, it is entirely probable that the cyclical swings of production have of late been smaller, while the average rate of growth of production has been higher, than is commonly supposed.

V

It is in the nature of an economic vocabulary to change slowly, when it changes at all. We keep speaking of the price system, the business cycle, capitalism, socialism, communism, and sometimes we even refer to the "inherent instability" of capitalism or of communism; but the reality that these terms and phrases are intended to denote or sum up does not remain fixed. I have tried to show how a conjuncture of structural changes in our economy has served to modify the business cycle of our times. Some of these changes were planned while others were

unplanned. Some resulted from efforts to control the business cycle while others originated in policies aimed at different ends. Some arose from private and others from public activities. Some are of very recent origin and others of long standing. The net result has been that the intensity of cyclical swings of production has become smaller. The links that previously tied together the cyclical movements of production, employment, personal income, and consumption have become looser. And, as everyone knows, the once familiar parallelism of the short-term movements in the physical volume of total production, on the one hand, and the average level of wholesale or consumer prices, on the other, has become somewhat elusive.

To be sure, special factors of an episodic character played their part in recent business cycles, as they always have. For example, a pent-up demand for civilian goods was highly significant in checking the recession of 1945. The tax reduction legislated in April 1948 helped to moderate the recession which began towards the end of that year. The tax cuts announced soon after business activity began receding in 1953 merely required executive acquiescence in legislation that had been passed before any recession was in sight. Again, the sputniks spurred the government's response to the recession of 1957-58. Special circumstances such as these undoubtedly weakened the forces of economic contraction at certain times; but they also strengthened them at other times. In particular, governmental purchases from private firms have not infrequently been an unsettling influence rather than a stabilizing force. We need only recall the drop of federal expenditure on commodities and services from an annual rate of \$91 billion in the early months of 1945 to \$16 billion two years later, or the fall from \$59 billion to \$44 billion soon after the Korean hostilities came to a close. The ability of our economy to adjust to such major disturbances without experiencing a severe or protracted slump testifies not only to our good luck; it testifies also to the stabilizing power of the structural changes that I have emphasized.

It seems reasonable to expect that the structural changes in our economy, which have recently served to moderate and humanize the business cycle, will continue to do so. The growth of corporations is not likely to be checked, nor is the tendency to pay fairly stable dividends likely to be modified. The scale of governmental activities will remain very extensive, and so it would be even if the communist threat to our national security were somehow banished. Our methods of taxation might change materially, but the income tax will remain a major source of governmental revenue. Governmental expenditures might fluctuate sharply, but they are not likely to decline during a recession merely

because governmental revenues are then declining. The social security system is more likely to grow than to remain stationary or contract. Private pension arrangements will multiply and so also may private supplements to unemployment insurance. Our population will continue to grow. The restlessness and eagerness of consumers to live better is likely to remain a dynamic force. Research and development activities will continue to enlarge opportunities for investment. Governmental efforts to promote a high and expanding level of economic activity are not likely to weaken. Private businesses will continue to seek ways to economize on inventories and otherwise minimize the risk of cyclical fluctuations in their operations. Employment in agriculture is already so low that its further decline can no longer offset future gains of the service industries on the scale experienced in the past. The spread of white-collar occupations throughout the range of industry will continue and may even accelerate. For all these reasons, the business cycle is unlikely to be as disturbing or troublesome to our children as it once was to us or our fathers.

This is surely a reasonable expectation as we look to the future. Yet, it is well to remember that projections of human experience remain descriptions of a limited past no matter how alluringly they are expressed in language of the future. A lesson of history, which keeps resounding through the ages, is that the most reasonable of expectations sometimes lead nations astray. If my analysis is sound, it supports the judgment that the recessions or depressions of the future are likely to be appreciably milder on the average than they were before the 1940's. It supports no more than this. In view of the inherent variability of business cycles and our still somewhat haphazard ways of dealing with them, there can be no assurance that episodic factors will not make a future recession both longer and deeper than any we experienced in the postwar period.

Nor can there be any assurance that the conjuncture of structural changes on which I have dwelt will not be succeeded by another which will prove less favorable to economic stability. For example, although the stabilizing influence of the rising trend of white-collar employment in manufacturing has been more than sufficient to offset the cyclically intensifying influence of a greater concentration of employment in the durable goods sector, the balance of forces might be tipped the other way in the future. This could happen all the more readily if, as white-collar work continues to grow, the need to cut costs during a recession should make this type of employment less stable than it has been. Again, our exports in recent decades have tended to intensify the business cycle somewhat, and this factor may become of larger significance.

Also, it still remains to be seen whether the rising trend of prices—to say nothing of the rapidly growing consumer and mortgage debt—may not serve to complicate future recessions.

A generation ago many economists, having become persuaded that our economy had reached maturity, spoke grimly of a future of secular stagnation. Parts of their analysis were faulty and their predictions have proved wrong; yet their warning helped to mobilize thought and energy to avert the danger of chronic unemployment. Of late, many economists have been speaking just as persuasively, though not always as grimly, of a future of secular inflation. The warning is timely. During the postwar recessions the average level of prices in wholesale and consumer markets has declined little or not at all. The advances in prices that customarily occur during periods of business expansion have therefore become cumulative. It is true that in the last few years the federal government has made some progress in dealing with inflation. Nevertheless, wages and prices rose appreciably even during the recent recession, the general public has been speculating on a larger scale in common stocks, long-term interest rates have risen very sharply since mid-1958, and the yield on stocks relative to bonds has become abnormally low. All these appear to be symptoms of a continuation of inflationary expectations or pressures.

Such developments have often led to economic trouble. They could do so again even if our balance of payments on international account remained favorable. That, however, has not been the case for some time. The "dollar shortage" which influenced much of our economic thinking and practice during the past generation seems to have ended. The economies of many areas of the Free World, especially of Western Europe and Japan, have lately been rebuilt and their competitive power has been restored. This re-establishment of competitive and monetary links between our country and others may cause us some inconvenience, but it is basically a promising development for the future. It should stimulate our economic growth as well as contribute to the economic progress and political stability of other nations of the Free World. Our financial policies, however, will gradually need to be adjusted to the changed international environment. Although our gold stocks are still abundant and the dollar is still the strongest currency in the world, we can no longer conduct our economic affairs without being mindful of gold, or of the short-term balances that foreign governments and citizens have accumulated here, or of the levels of labor costs, interest rates, and prices in our country relative to those in other nations. Unless the deficit in our balance of payments is soon brought under better control, our nation's ability to pursue contracyclical policies during a business recession may be seriously hampered.

We are living in extraordinarily creative but also deeply troubled times. One of the triumphs of this generation is the progress that our nation has made in reducing economic instability. In the years ahead, no matter what we do as a people, our economy will continue to undergo changes, many of which were neither planned nor anticipated. However, the course of events, both domestic and international, will also depend—and to a large degree—on our resourcefulness and courage in deliberately modifying the structure of our economy so as to strengthen the forces of growth and yet restrain instability.

Great opportunities as well as difficult problems face our nation. Monopoly power, which is still being freely exercised despite all the exhortation of recent years, can be curbed by moving toward price and wage controls or, as many economists still hope, by regenerating competition. Higher protective tariffs, import quotas, and "Buy American" schemes can be embraced or, as many economists hope, avoided. A tax structure that inhibits private investment and directs people's energy into activities that contribute little to the nation's economic strength can be retained or reformed. Costly farm surpluses can be further encouraged by government or discontinued. The problems posed by the slums and the inefficient transportation of many of our cities can be neglected or attacked with some zeal. The inadequacy of our unemployment insurance system can be ignored until the next recession or corrected while there is opportunity for a judicious overhauling. In general, our governmental authorities can deal with recessions by trusting to improvisations of public spending, which often will not become effective until economic recovery is already under way, or by providing in advance of any recession for fairly prompt and automatic adjustment of income tax rates to a temporarily lower level of economic activity. The coordination of governmental policies, which may make the difference between success and failure in promoting our national objectives, can be left largely to accidents of personal force and ingenuity or it can be made systematic through an economic policy board under the chairmanship of the President. These and other choices will have to be made by the people of the United States; and economists—far more than any other group—will in the end help to make them.

INFLATION: COST-PUSH AND DEMAND-PULL

By FRANKLYN D. HOLZMAN*

The primary purpose of this paper is to draw clearly, at the macro-economic level, the distinction between cost-push and demand-pull inflations and to show their interrelationships.¹ Criteria for distinguishing between them at the macroeconomic level will be discussed in Section I. Section II presents a model which expresses the interrelationships between these cost and demand forces. In Section III, the conditions under which it *is* or *is not* possible to distinguish between cost and demand inflations are established. In Section IV the U.S. inflation of 1955-58 is briefly examined in terms of the results derived from the model.

The concern here is with creeping inflations such as the United States has been experiencing in the postwar period. This justifies neglect of expectations. We also make the assumption that household consumption is subject to the money illusion. The implications for the model of "real-income consciousness" will be indicated, however. The supply of money is not included in the model. For simplicity, it is assumed that the monetary authority provides sufficient funds to meet the requirements of the economy at a fixed interest rate. This does not appear to be a serious simplification in terms of the objectives of this paper. The term cost-push will refer, unless otherwise specified, to a wage-push. This is not meant to deny the possibility of an autonomous "profit-push" but indicates a belief that, in recent years at least, the wage-push has probably assumed greater importance. Finally, the model is conceived to deal only with the short-run impacts of cost and demand forces, and not with questions pertaining to secular inflation.

*The author is professor of economics at the University of Washington. He wishes to express appreciation to Robert Dorfman, James Duesenberry, Arthur Greenwood, Herbert Levine, Robert Solow, and James Tobin for valuable suggestions on various drafts of this paper; and also indebtedness to the Ford Foundation whose fellowship made possible this research. An early version of this paper was presented at the Econometric Society meetings in December, 1958.

¹The Swedish approach, initiated by Bent Hansen [5] and followed by Hans Brems and Ralph Turvey [8] and others, of distinguishing between factor and final output markets is not equivalent to distinguishing between cost-push and demand-pull. Actually, these writers simply separate demand-pull effects in factor-market and final-output market components and do not consider increases in wages where demand is not permissive.

I. Some Criteria of Cost and Demand Inflation

At first glance it would not appear difficult to distinguish between cases of inflation which are due respectively to the push of wage increases and to the pull of demand. It seems reasonable to infer that if an inflationary situation is characterized by a buyers' market, prices are being *pushed* up faster than demand will permit.² On the other hand, if a sellers' market exists in the course of an inflationary movement, one can infer that the inflation is demand-inspired, that demand is out-running supply, and that prices are being *pulled* up. In practice, the criteria just stated would have to be formulated differently to be operationally useful. Thus, a buyers' market can be said to exist when, at given prices, inventories begin to accumulate³ and factors of production become unemployed. The opposite would be true of a sellers' market.

Probably the simplest indicator of softening markets is a rise in the level of unemployment. This is certainly an easier statistic to come by in most countries than the degree of capital-capacity utilization, and probably both are easier to come by and more reliable than other indicators such as changes in inventories, manufacturers' advance orders, etc. One defect of unemployment as an indicator is that it may be sticky. That is, there might be cost-push with no increase in unemployment because workers are not usually laid off immediately as markets soften, although underemployment may develop and show up in the form of shorter hours. Thus, if wage rates, prices, and unemployment (including an allowance for shorter hours⁴) are all rising simultaneously, wages are being pushed up faster than demand; the cost-push effects of the wage-rate increase predominate over whatever demand-pull forces are operating in the economy. On the other hand, if wage rates, prices, and employment are rising simultaneously, we say, as a first approximation, that demand-pull predominates. This method seems the best for making the distinction.

A second possible method would involve a comparison of the rates of increase of prices and wages. If prices are rising faster than wage rates, one could argue that demand is at work. The opposite would not be true however; wage rates rising more rapidly than prices would not be an unambiguous indicator of cost-push. One would expect wage rates to rise faster than prices as long as (1) wages do not comprise the total cost of commodities and (2) increases in productivity occur. If however wage rates, adjusted both for productivity increases and for the percentage of total cost which they comprise, still increase more rapidly

² We assume imperfect markets since cost-push cannot occur in a perfect market.

³ Accumulating inventories might also signify the speculative anticipation of rising prices of materials such as often prevails in a sellers' market.

⁴ An adjustment may also have to be made for the annual increment to the labor force.

than final output prices, a case could be made for wage-push. Under these circumstances, the profit per unit of output would be expected to decline. The adjusted price-wage gap or profit criterion loses some of its usefulness because the price-wage gap and profit per unit of output are both so difficult to measure accurately for the purpose at hand. In addition, if there should be an autonomous profit-push either with or without the wage-push then the price-wage gap would not close as indicated above but would remain constant or would widen. For these reasons, the price-wage gap criterion is dropped.⁵

A third possible method suggests itself. Since the demand for labor is derived from the demand for finished products, one would expect to find, under demand-pull, final output prices leading wage rates temporarily though not necessarily in magnitude. Under cost-push, wage rates would be expected to lead prices. However, since wage rates and prices usually rise simultaneously, it is a chicken-egg type problem to say which was first. This problem poses insuperable difficulties and the lead-lag criterion is therefore not employed.⁶

The unemployment criterion seems to be operationally the most satisfactory. Final judgment should be withheld, however, because so far the cost and demand inflationary forces have been presented in an oversimplified manner. More realistically, we find it appropriate to treat cost inflation as constituting the total impact of the following classes of forces: (1) cost-push—the change in prices and employment as a direct result of the cost effect of higher wage rates; (2) direct cost-pull—the change in prices and employment due to the change in spending which results from increasing wage rates at the expense of other factor incomes⁷; and (3) indirect cost-pull—the change in prices and employment which results from changes in investment, exports, and government expenditures induced by the wage-rate increases. Demand-pull, then, is defined as the change in prices and employment due to changes in investment, exports, and government expenditures autonomous to the wage-rate increase.

⁵ It can be shown that, in the absence of profit-push, the price-wage gap criterion corresponds, in theory, with the unemployment criterion in distinguishing cost and demand inflations.

⁶ The other criteria are also affected by this difficulty but not so crucially. Thus demand may pull prices and profits ahead of wages in one period only to have them "catch up" the following period. It is difficult to say in period II whether wages were pushed or pulled up. In the same sequence, demand may initially raise employment, but not wages. When wages finally rise in period II, and employment declines, the decline in employment can be attributed to either cost-push in period II or to the demand-pull of period I. Clearly, if there is no preponderance of either cost-push or demand-pull, it is probably not very meaningful to try to distinguish between them as the economy shifts back and forth from one to the other, nor may such a distinction be possible.

⁷ This is not a precise definition. See equations (8)-(10) below.

II. The Model: Employment and Price Effects of Wage and Demand Increases

A. Components of the Model

The symbols used to represent the variables and parameters of the model are:

Y = national income = national expenditures.

W = national wage bill or Nw .

w = wage rate per worker per year.

V = total profits.

G = expenditures by government for domestic goods and services:

$G(w)$ = same, induced by wage change; $G(a)$ = same, autonomous to changes in income and wages.

I = expenditures for domestically produced investment; $I(w)$ and $I(a)$ as in G ; induced investment as $v'V_{t-1}$.

X = expenditures for domestically produced exports; $X(w)$ and $X(a)$ as in G .

N = employment: $\Delta N = N_{t-1} - N_{t-2}$.

P = price level.

Q = level of output.

m = workers' marginal propensity to consume (spend).

v = profit-receivers' marginal propensity to consume.

v' = profit-receivers' marginal propensity to invest.

\bar{v} = profit-receivers' marginal propensity to spend ($v + v'$).

e = impact elasticity of demand for labor [defined in equation (1) below].

k = percentage of wage increase which comes out of profit; $(1 - k)$ = percentage of wage increase passed on in higher prices.

Δr = change in output per worker since previous wage increase (say 1 year).

d and d' = the percentage of the increase in demand (ΔD) which raises prices and which is spent on unemployed labor, respectively.

ΔD = increment to inflationary gap ($\Delta Y - \Delta S$) calculated as difference between new level of expenditures and new supply price.

ΔS = increase in value of goods sold due to cost-push.

$z = (m' - \bar{v}k) - (1 - k)$.

t = subscript—time.

Before proceeding to the model, we will discuss briefly e , k , d and d' , m , \bar{v} , and Δr :

The letter e represents the impact-elasticity of demand for labor by employers, i.e., the elasticity of demand of employers for labor in the short run (say 6 months to a year), when faced with a wage-rate

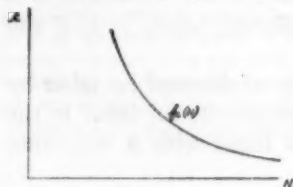
increase, on the assumption that the demand schedule remains unchanged.⁸ Write:

$$(1) \quad e = - \frac{\frac{\Delta N}{N_{t-1}}}{\frac{\Delta w}{w_{t-1}}}$$

Neither e nor some of the other variables and parameters introduced in this section are meant to be operational but are designed to serve an heuristic end—to help isolate, conceptually, phenomena which cannot be isolated in the real world. (The purpose of e , for example, is to isolate the empirically nonisolable *direct* employment effects of a cost-push.) Nevertheless, the connection between these variables and parameters and the real economy should be obvious.

The value of e is assumed to reflect not only overt unemployment but underemployment in the form of shorter hours as well. The value of e for labor as a whole is probably fairly low in general reflecting the low marginal rate of substitution between labor and other factors in the short run. However, it seems likely that the value of e will depend on the level of employment and on whether the trend is up or down. For, in fact, the demand curve for labor will depend largely on the expectations of entrepreneurs as to how much they can sell at higher prices and this will depend on the state of the market and on whether the level of profits, V , is adequate to absorb all or part of a wage increase if necessary. In periods of expansion, profits will probably be high enough to absorb part of a wage-rate increase if necessary, but even more important, entrepreneurs will be willing to raise prices and maintain output on the basis of optimistic expectations. In periods of low and declining employment the reverse is likely to be true. The very-short-run demand curve for labor, as the entrepreneur sees it, then, will be very inelastic at high and rising levels of N , but then will become fairly elastic at low and declining levels of N (and V). For these reasons write:⁹

⁸ ΔN refers to $N_{t-1} - N_{t-2}$ and Δw to $w_{t-1} - w_{t-2}$. The dating of N and w in equation (1) requires explanation. The usual method of expressing an arc elasticity in terms consistent with the definition of point elasticity is to use average values of N and w respectively. However, such an expression would have substantially complicated the model presented below. A simpler (and more convenient in terms of our model) method of achieving the same result is to date N and w differently as in equation (1). Equation (1) reduces to the traditional point elasticity formula when ΔN and Δw are infinitesimals rather than finite changes.



⁹ The relationship between e and N may take the form indicated in the chart: as N increases, e approaches zero as a lower limit. The practical upper limit of e would be much lower than infinity since the wage-push would stop probably before N had fallen very far.

$$(2) \quad e = f_e(N, V); \quad \frac{\partial f_e}{\partial N} \quad \text{and} \quad \frac{\partial f_e}{\partial V} < 0.$$

In the case of $f_e(V)$, it should be noted, successive wage-rate increases over a period of years which successively reduce profits will cause the value of e to rise.

The letter k is used to represent the part of a payroll increase which is absorbed by profits. The term $(1-k)$, therefore, is the part of the wage increase which is marked-up into price.¹⁰ The value of k will be determined very largely by the state of the market. If employment is at a high level (and/or rising) because of high levels of autonomous expenditures, entrepreneurs will be able to pass on most if not all of a wage increase into higher prices, i.e., k will be small.¹¹ On the other hand, at low or declining levels of employment, k will be large as wage increases must be absorbed in profits. The value of k will also be affected by the customary pricing practices of entrepreneurs which to some extent are rigid over short periods and may not react immediately to changes in market conditions. Ignoring this last fact, we write:¹²

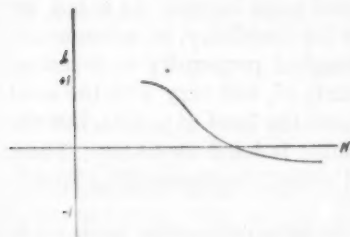
$$(3) \quad k = f_k(N); \quad f'_k < 0.$$

It should be noted that e and k tend to move in the same direction becoming smaller in periods of expansion and larger in periods of contraction.

¹⁰ The value of k does not represent the conscious mark-up decision of the entrepreneur but rather the ex post percentage of the payroll increase which comes out of profits after price, employment, and output have been adjusted for the wage increase. In this respect it is analogous to the usual measurement of the incidence of a sales tax on profits. Barring extremely large wage increases and very highly elastic demand curves for final output, there will not be much difference between the entrepreneur's decision as to how much of the wage-increase to absorb and the value of k .

¹¹ If there is profit-push, k will be negative; demand-pull implies $k \leq 0$.

¹² k would tend to vary inversely with N as in the chart: When N is at very low levels, k will rise but approach a limit in the neighborhood of 1 (higher than 1 means that prices are reduced by even more than the amount of the wage rate increase). At high levels of N , k becomes 0, and under very inflationary conditions, probably, approaches some negative limit a little below 0 (meaning that prices are raised by more than the wage-rate increase). Note that while we posited that k depended on both the level and direction of change of employment, for simplicity of notation, k was made a function of N alone. In all functional relationships of N , it should be understood that rising N has the same effect as a high level of N , and declining N , the same effect as a low level of N . Note also that when we speak of high levels of N , we usually mean relative to full employment; and when we speak of low levels of N , the implication is a high level of involuntary unemployment.



The letters d and d' represent those fractions of a change in expenditures (demand) which raise prices and employment respectively. We assume that an increase in demand has both price and output effects, these depending in the usual way on the slopes and intercepts of the supply and demand curves for final output [1, p. 4]. The coefficient d is applied directly to the change in demand, along with a quantity deflator, to give us the resulting change in price. The change in employment of labor as a result of a change in expenditures for final output depends on the supply and demand curves for labor, the latter being derived in a complex manner from the supply and demand curves for final output. For simplicity, we multiply any change in expenditures by d' (and divide by the wage rate) to represent the whole complex of parameters which gives us the change in employment which results. The d 's do not add up to 1.

At low levels of employment, d' will approach a value equal to the percentage of wage income in total national income, or W/Y . That is to say, increases in demand will increase employment but not raise wage rates much. As employment increases and approaches full utilization of the labor force, the value of d' will decline and approach zero: since by definition, no more labor remains to be employed, any increase in demand will involve the use of other unemployed resources or serve to pull prices and wage rates up still further. The form of d' as a function of N will be similar to that of e with the exception that the upper limit, as N declines, is probably less than W/Y .¹³ Write:

$$(4) \quad d' = f_{d'}(N); \quad f_{d'}' < 0.$$

The value of d will move in the opposite direction from d' . At low levels of employment, changes in demand will have primarily output effects and d will approach zero. At full employment, price effects will predominate and d will approach unity. Write:

$$(5) \quad d = f_d(N); \quad f_d' > 0.$$

We view m as the straightforward parameter in a simple consumption function relating worker spending and wage income. As noted, we assume a money illusion. We also assume for simplicity, no autonomous changes in consumption and that the marginal propensity to invest of workers is zero. The value of \bar{v} , particularly v' , will vary with the level and direction of changes in employment and the level of profits, but the exact nature of the functional relationships is hard to specify. Thus, if employment and income are high and rising, entrepreneurial spend-

¹³ If wage-rates are being pushed up faster than other factor returns, other factors will be substituted for labor.

ing, and particularly investment expenditures, will tend to increase. On the other hand, as k declines and the level of profits rises, while the total amount of investment out of retained profits will tend to increase and the total amount of owner spending on consumers' goods will also increase, the *proportion* of spending to profits, \bar{v} , may decline in both instances. The opposite is true in periods of low and declining levels of employment. Since profits tend to rise in good times and fall in bad times, these forces always tend to offset each other and we cannot say here in which direction the net effect is likely to be. We write:

$$(6) \quad \bar{v} = f_v(N, V); \quad \frac{\partial \bar{v}}{\partial N} > 0, \quad \frac{\partial \bar{v}}{\partial V} \leq 0.$$

Since we do not know the net effect of these forces on \bar{v} , we assume throughout this paper that the value of \bar{v} remains constant.

5. The term Δr stands for the change in labor productivity since the previous wage-rate change, or change in output per worker per period (say one year). We assume that the change in productivity, like the wage change, takes place all at once. Its impact on the absorption of wages into profits is treated explicitly in our equations (and k is therefore here left unchanged by changes in productivity). An increase in productivity also reduces the value of e by increasing the level of profits [see (2)]; its impact on e is treated implicitly—a large increase in productivity is assumed to reduce the unemployment which results from a wage-push.

Before proceeding to the equations, it should be noted that we assume a one-period lag of expenditure behind income. To simplify the model, we assume that consumption and savings, imports, and taxes are all functions of income and that the values of m and \bar{v} reflect this fact. The equations presented below are derived in a national income framework in the appendix.

B. Employment Effects¹⁴

1. *Cost-push*: Assuming no change in demand, a wage-rate increase will act to reduce employment (and output). Following equation (1), the reduction in employment is defined as:

$$(7) \quad \Delta N^1 = - \frac{N_{t-2} \Delta w e}{w_{t-1}}.$$

¹⁴ The starting point of the model is Bronfenbrenner's brilliant paper, "A Contribution to the Aggregate Theory of Wages" [2]. Rothschild has shown in a comment [6] that Bronfenbrenner's analysis and results are conditioned by the fact that he assumes a complete money illusion on the part of his consumers rather than real-income consciousness. Bronfenbrenner's reply points out that the effects of real-income consciousness tend to be offset by real-balance (Pigou) effects. In a later section, an attempt is made to show the effects on our results of assuming real-income consciousness.

2. *Direct cost-pull*: We assume that wages and profits are the only factor returns. Then the increase in wage rates will (in the absence of profit-push) result in a reduction in profits. If the propensity to spend of wage-earners, m , exceeds that of profit-receivers, \bar{v} , expenditures will rise and employment will tend to increase, offsetting the cost effects noted above.¹⁵

$$(8) \quad \Delta Y = mN_{t-2}\Delta w(1-e) - \bar{v}kN_{t-2}(\Delta w - \Delta r)(1-e).$$

The first term on the right represents the change in expenditure out of wages. The change in wages, $N_{t-2}\Delta w$ ($i-e$), is multiplied by m to get the change in spending by wage-earners.¹⁶ The second term represents the change in expenditures out of profits. This is obtained by estimating the extent to which the wage-rate increase diminishes profits. For this purpose the wage-rate increase is reduced by Δr , the increase in output per worker since the previous wage increase. The wage increase adjusted for Δr is multiplied by k , the percentage of wage increase absorbed in profits, and by \bar{v} , the marginal propensity to spend of profit-receivers.

The expenditure effect of equation (8) does not represent the net inflationary (deflationary) gap generated by the wage-push. The gap is reduced to the extent that the wage-push has raised wages and prices. In other words, labor and final output must now be purchased at higher prices. The increase in supply price (i.e., value) of goods sold due to cost-push and adjusted for Δr is represented as follows:

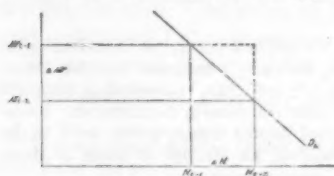
$$(9) \quad \Delta S = N_{t-2}(\Delta w - \Delta r)(1-e)(1-k).$$

In equation (9), the increase in wage rates is adjusted for an increase in productivity; the resulting amount is multiplied by the price markup $(1-k)$. The inflationary (deflationary) gap or net direct expenditure effect of the wage-push is equal to (8) - (9):

$$(10) \quad \Delta D = mN_{t-2}\Delta w(1-e) - N_{t-2}(\Delta w - \Delta r)(1-e)[\bar{v}k + (1-k)].$$

The change in employment which results from the expenditure effect of direct cost-pull is obtained by multiplying (10) by d'/w_{t-1} where d' is the fraction of expenditures which goes to hire labor.

¹⁵ This is only true given certain values of the other parameters in equation (8). The cost-pull effects will be analyzed in more detail in Section III. Equation (8) is derived in a national income framework in the appendix.



¹⁶ The change in wages is equal to $N_{t-2}\Delta w - \Delta N w_{t-2}$. Substituting in (7) gives us, $N_{t-2}\Delta w - N_{t-2}\Delta w e$, which reduces to $N_{t-2}\Delta w(1-e)$.

$$(11) \quad \Delta N^3 = \frac{d'}{w_{t-1}} \Delta D.$$

3. *Indirect cost-pull*: Wage-rate increases have an indirect cost effect on expenditures and employment by affecting, with some lag: the level of autonomous (to income) investment, the level of exports, and the level of government expenditures.¹⁷

The level of, and changes in the level of, investment are a function of the rate of profit, rate of interest, availability of credit, expectations about prices, and many other variables.¹⁸ The rate and level of profit depend importantly, of course, on both Δw and k as indicated in equations (8) and, in the appendix, (a.6). Following these equations we assume that an increase in wage rates tends to reduce investment via the cost effect.

Wages are an important part of the selling price of export commodities. An increase in the wage rate would tend, in the absence of comparable changes in wages abroad or of offsetting changes in productivity and exchange rate, to reduce a nation's level of exports.

While increases in wage rates have a depressing effect on spending and employment through investment and exports, the opposite may be true in the case of government expenditures. There is a tendency for the government to try to maintain its level of real expenditures despite increases in costs. Also, as a matter of general fiscal policy, the government tends to validate wage-rate increases by spending to maintain employment when wage increases (or anything else) lead to unemployment. It appears strategic, however, to abstract here from the effects of fiscal policy designed to maintain full employment, in attempting to assess the impact of a cost-push, since fiscal policy is a tool used to deal with the unemployment or inflation which results from a wage-rate increase.

The change in employment, then, which results from indirect cost-pull is likely to be negative through the impact of a wage increase on exports and investment, but could be positive as a result of positive government reaction:

$$(12) \quad \Delta N^3 = \frac{d'}{w_{t-1}} [\Delta I(w) + \Delta X(w) + \Delta G(w)].$$

4. *Demand-pull*: Finally, the level of demand and of employment

¹⁷ Recall that we assume savings, taxes and imports are induced.

¹⁸ We divide investment, here, into that induced by changes in wages $I(w)$, that induced by changes in profits or income (represented by $v'V_{t-1}$ in equation (a.4) of the appendix, and that autonomous to both wage and income changes, $I(a)$. It should be noted that an increase in wages could have a positive effect on investment over the longer run by encouraging expenditure on labor-saving machines and equipment. Also, part of the impact of a wage increase on investment will be reflected in the marginal propensity to invest, v' .

will be affected very importantly by autonomous¹⁹ changes in: investment, $I(a)$; exports, $X(a)$; and government expenditures, $G(a)$. The change in employment which results may be represented by:²⁰

$$(13) \quad \Delta N^t = \frac{d'}{w} [\Delta I(a) + \Delta X(a) + \Delta G(a)].$$

It should be noted that changes in autonomous investment, exports, and government expenditures can affect the level of employment indirectly by affecting the value of e and k , as indicated above. Also, given equivalent values of new autonomous expenditures, on the one hand, and increases in payroll, $N_{t-2}\Delta w(1-e)$, on the other, the employment (and price) impact of the former will be much greater than that of the latter. This is because the full amount of autonomous expenditures is spent in the first round on goods and services, whereas the increase in payroll: is partly saved ($1-m$); is partly at the expense of entrepreneurial spending (k); and is offset in part by the cost-push impact on employment.

The total change in employment, ΔN , is represented as the sum of the ΔN^t 's where ΔN^1 will always be negative except under the most inflationary circumstances, but the remaining ΔN^t 's can take on positive, negative or zero values. From this it becomes quite clear that one cannot necessarily infer either that wage-rate increases cause unemployment because an increase in wage rates is observed to be associated with a rise in unemployment or that wage-rate increases increase employment because a rise in wage rates is observed to be associated with an increase in employment. One must also take into consideration the fact that autonomous changes in investment, exports, and government expenditures unrelated to the wage change may have been responsible for the observed relationship.

C. Price Effects of Wage and Demand Increases

The price effects of wage-rate and demand increases are quite closely related to the employment effects and can therefore be set forth very briefly. The cost-push effect on prices can be represented by simply dividing the increase in value of goods sold due to cost-push, of equation (9), by the quantity of goods:

$$(14) \quad \Delta P^1 = \frac{\Delta S}{Q_{t-1}}.$$

The direct cost-pull effect on prices is represented by multiplying the change in expenditures of equation (10) by d , that fraction of the in-

¹⁹ With respect to income and wage changes.

²⁰ w takes on the date at which autonomous changes occur.

crease in expenditures which raises prices, and dividing through by the total quantity of goods:

$$(15) \quad \Delta P^2 = \frac{d}{Q_{t-1}} \Delta D.$$

The indirect cost-pull and demand-pull effects on prices (ΔP^3 and ΔP^4) are written analogously to the employment effects in (12) and (13). The total price rise in the period is the sum of the ΔP 's.

III. Cost Inflation or Demand Inflation?

A. The Problem

We define a cost inflation as comprising all those effects which result from an autonomous increase in wage rates, *viz.*, the sum of the effects of cost-push, direct cost-pull and indirect cost-pull. A demand inflation is that inflation which results from autonomous (to wages and income)

TABLE 1—COST AND DEMAND EFFECTS ON PRICES AND EMPLOYMENT

	Cost-Push	Direct and Indirect Cost-Pull		Demand-Pull	
		Positive	Negative	Positive	Negative
Price	upward	upward	downward	upward	downward
Unemployment	upward	downward	upward	downward	upward

changes in investment, exports and government expenditures. The criterion for distinguishing between cost and demand inflation presented earlier in the paper was that a cost-push raised prices but increased unemployment while a demand-pull raised prices but decreased unemployment.²¹

It is quite obvious, intuitively, that an increase in demand will have the effect just noted. From equations (7) and (14), we see that the cost-push effect of a wage-rate increase will be to increase unemployment and raise prices.²² So far, then, the inflations are distinct.

What about the effects of direct and indirect cost-pulls? Leaving aside, for the moment, whether they are likely to be positive or negative, the essential point is that they work through demand. Thus, if positive, they reduce unemployment and prices; if negative, they increase unemployment and prices. The sum total of effects may be more easily visualized in Table 1.

²¹ Assuming no increase in the labor force.

²² There are other conditions as well but these are almost sure to be fulfilled. For an increase in unemployment, e must be greater than 0. This is sure to be the case except under very inflationary circumstances. And for prices to increase, e and k must be less than 1. k will always be less than 1, and e will be less than 1 except in a moderately deep recession.

The difficulty in distinguishing between cost and demand inflations is apparent from the table. Positive cost-pull while re-enforcing the price effect of cost-push tends to reverse its impact with respect to unemployment (and has the same effect as positive demand-pull). Negative cost-pull re-enforces the unemployment indicator but reverses the price effect and, if strong enough, could cause deflation rather than inflation. In this respect it has the same impact as negative demand-pull.

It is clear that a necessary condition for the validity of our unemployment criterion is that cost-push effects must dominate cost-pull effects where they operate in different directions. This condition has two parts: (1) if cost-pull is positive it must not reduce unemployment by as much as cost-push increases it; (2) if cost-pull is negative, it must not reduce the price level by as much as cost-push raises it (or the result would be deflation). Because the indirect cost-pull effects are so long-run in incidence and their magnitude and direction impossible to define with any precision, we shall have to restrict ourselves here to cost-push and direct cost-pull.

B. Does Cost Inflation Increase Prices and Unemployment?

Condition (1), stated in the previous paragraph, will be fulfilled if:

$$(16) \quad \Delta N^1 + \Delta N^2 < 0.$$

Assuming for the moment that there have been no changes in productivity, ($\Delta r = 0$) this can be expressed in terms of our variables and parameters as [from (7) and (11)]:

$$(17) \quad \frac{d'(1-e)[(m-\bar{v}k) - (1-k)]}{e} < 1.$$

Let us look first at the bracketed term $[(m-\bar{v}k) - (1-k)]$ which we designate by the letter z . Recall that k is the percentage of a wage increase absorbed in profits, and m and \bar{v} are the marginal propensities to spend of wage-earners and profit-receivers, respectively. The range of possible values of z can be estimated by assuming all possible values of k and examining the implications for m and \bar{v} . At the extremes, k is likely to approach 0 at full employment and approach 1 at high levels of unemployment. This gives us the following equations:

$$\text{Full employment: } k = 0, m = \bar{v} + 1$$

$$\text{Much unemployment: } k = 1, m - \bar{v} = \bar{v}$$

Where $k = 0$, \bar{v} must be negative since it is unlikely that the marginal propensity to consume of workers will be unity or greater. Where $k = 1$, \bar{v} will undoubtedly be less than, say, .5 as a maximum since this value

represents the difference between workers' and entrepreneurs' propensities to spend. Thus, we see that s may vary from a small negative fraction at full employment to, say, .5, at low levels of employment.

Returning to inequality (17), Table 2 summarizes probable hypothetical value-ranges of its parameters at different levels of unemployment. Extreme values are taken purposely to establish the condition unambiguously.

TABLE 2—HYPOTHETICAL VALUES OF VARIABLES AT DIFFERENT UNEMPLOYMENT LEVELS

	Little Unemployment	Much Unemployment	Intermediate Unemployment
	(e.g. <3%)	(e.g., >8%)	(3-8%)
s	-.1 to -.3	.1 to .3	.3 to -.2
d'	.1 to .3	.7 to .9	.4 to .6
c	.1 to .3	.9 to 1.1	.4 to .6
$1-e$.7 to .9	-.1 to .1	.6 to .4
Maximum $\frac{d's(1-e)}{e}$	-.09	+.03	+.28

From Table 2 we may infer that inequality (17) and therefore condition (1) are fulfilled. Thus a wage-push leads to unemployment because the positive employment effects of direct cost-pull are not likely to be sufficiently strong to offset the negative employment effects of cost-push.

Condition (2) will be fulfilled if:

$$(18) \quad P^1 + P^2 > 0.$$

Assuming again no changes in productivity, this condition can be expressed as follows [from (14) and (15)]:

$$(19) \quad (1-e)[(1-d)(1-k) + d(m - \bar{v}k)] > 0.$$

Since we are not primarily interested in situations of such a high level of unemployment that $e > 1$, we can rewrite (19) as follows:

$$(20) \quad e < 1, \quad k < \frac{1-d+dm}{1-d+d\bar{v}}.$$

Since $m > \bar{v}$ the fraction will be greater than 1. And k , as we have seen, will be less than 1. Thus (20) and therefore condition (2) are fulfilled. This means the negative price effects of negative direct cost-pull, if any, will not offset the positive price effects of cost-push—a wage increase will lead to a price rise.

Under our assumed conditions, then, we have demonstrated that the cost-push and direct cost-pull effects of an autonomous wage-rate in-

crease lead to unemployment and a price rise and the necessary conditions for using our criterion as an indicator of cost inflation are fulfilled.

C. Qualifications: Changes in Productivity and Real-Income Consciousness

We have abstracted, so far, from indirect cost-pull and from increases in productivity, and have also assumed complete money-illusion on the part of consumers, depriving them of any real-income consciousness. Indirect cost-pull will not be elaborated further here, but attention will now be given to the possibility of an increase in productivity and of the existence of real-income consciousness.

Examination of the cost-push and cost-pull equations indicates that the assumption of no productivity change, particularly where the average wage-rate increase is small (say under 6 per cent), reduces the validity of our unemployment criterion for the following reasons: An increase in productivity (a) reduces the initial cost-push drop in employment. This is because an increase in productivity raises profits, and the value of e falls since it varies inversely with the level of profits [cf. equation (2)]. (b) Since less labor is unemployed with a smaller e , the positive cost-pull of expenditure out of wages is increased. (c) The negative cost-pull of expenditures out of smaller profits is reduced because the rise in productivity tends to maintain profits in the face of a wage increase. This is offset, but probably only in part, by the decline in the value of e . (d) The negative cost-pull of the rise-in-supply price (which reduces the inflationary gap) is also reduced for the same reasons as in (c). These effects are more easily visualized through equations (8) - (10). The assumption of an increase in productivity does not appear to be serious in the case of our price condition because it has offsetting effects.²³

²³ An increase in productivity (a) tends to reduce the increase in prices due to rising costs (14), but also tends to accentuate the price increase by (b) maintaining entrepreneurial income and spending in the face of a wage increase (15); and (c) by increasing the inflationary gap due to the failure of costs and prices to rise as much as mentioned in (a).

Note that if productivity increases are as large as wage-rate increases, the entire cost-push effect on employment and prices is eliminated, as can be seen from (7) and (14). This does not mean that the wage-rate increase has no inflationary impact—it has; but the impact is through positive cost-pull which, as we have seen, is increased by increases in productivity. From a policy point of view, this has considerable significance. This is because inflationary forces which operate through demand can be offset through fiscal and monetary measures and price stability can be achieved without a reduction in employment. Cost-push forces, on the other hand, can only be stopped through fiscal and monetary measures in so far as these measures reduce the level of employment and weaken the bargaining strength of the unions.

Finally, we must consider whether a price rise which occurs concomitantly with wage-rate and productivity increases (the latter two of equal magnitude), can be legitimately considered cost-push even though it doesn't meet the criterion of causing unemployment. I would argue that it should be so considered where the wage-rate and productivity increases are large

If we remove the assumption of money illusion and give our consumers real-income consciousness, two new effects are introduced, one with respect to increases in productivity and the other with respect to rising wage rates and prices. The positive effect on employment of productivity increases is reduced or negated by such a change of assumptions. An increase in productivity means that the same number of workers can produce a larger output and at no greater cost *or* the same output can be produced by fewer workers and at a lower cost. The money-illusion assumption is equivalent to postulating that the entire increment in output will be taken off the market and workers will not be unemployed as a result of the productivity increase. On the other hand, if there is real-income consciousness, the output effect of the productivity increase will lead to some unemployment. This will be offset either partially or completely by the positive impact on employment which results from the cost-pull effect of the productivity increase.

While real-income consciousness implies more unemployment in the case of a productivity increase, it means just the opposite in connection with rising wage rates and prices. Faced with rising prices, a family with money illusion spends the same percentage of its money income thereby ending up with relatively smaller real consumption. On the other hand, a family with real-income consciousness will spend a larger percentage of money income than previously in an attempt to maintain its real level of consumption. In terms of our model, this would mean that the positive cost-pull effects on employment of a wage-push would be larger than we have indicated.²⁴

relative to the price increase. Suppose, for example, there have been wage-rate and productivity increases of 6 per cent each along with a price increase of 2 per cent. Clearly, demand forces also must have been present or there would not have been a price rise. But suppose there had been no wage increase! Under these circumstances prices would have fallen by 4 per cent instead of rising by 2 per cent (ignoring here the possibility that part of the productivity increase would have served to raise profits rather than lower prices). One could say, then, that the 6 per cent wage increase, not the increase in demand, was *primarily* responsible for the price increase *if* the wage increase can be considered to have been autonomous to demand forces. Since autonomous demand forces are assumed to pull up prices by 2 per cent, it can be assumed that these forces had a similar impact on wages. This leaves two-thirds of the wage increase to be explained either as an autonomous "push" or as the result of the productivity increase. While the productivity increase may cause an increase in demand for goods because of its real-income effects on spending, it causes no increase in demand for labor because the same number of laborers can produce the larger output—in fact it might even reduce the demand for labor (see next paragraph in text). Therefore, we conclude that the wage-rate increase would have been largely autonomous and, under the circumstances outlined, largely responsible for the price increase which occurred. Difficulty in visualizing this may stem from the fact that, for analytical convenience, productivity and wage-rate changes were paired together in the model, though in fact they are largely mutually autonomous. In conclusion, it should be noted that where there has been, say, a price increase of 6 per cent and wage and productivity increases of 3 per cent, demand (not cost) forces obviously would have been the cause of inflation.

²⁴ Rothschild [6], in his manipulation of Bronfenbrenner's model, deduces that real-income

To summarize: Our criterion does not provide a completely unambiguous indicator of a cost inflation. Cost inflation will not necessarily give rise to unemployment: (a) If productivity increases are large relative to wage increases, cost-pull may be strong enough that rising wage rates and prices will be accompanied by rising employment. (b) If real-income consciousness is assumed, however, the output effects of a large productivity increase will cause unemployment which will offset in whole or in part the cost-pull effect in (a). (c) Real-income consciousness also implies, however, larger cost-pull effects from rising wage rates and prices, which will, in turn, reduce unemployment and tend to offset in whole or in part the output effects of (b).

The distinction between cost and demand inflation can be made unambiguously only where prices, wage rates and unemployment are rising simultaneously. In this situation, cost inflation is primarily responsible because (a) demand inflationary forces, if dominant, would more than offset the cost-push reduction in employment and (b) deflationary demand forces, if dominant, would prevent prices from rising. Cost inflation will be more likely to exhibit these characteristics the smaller the increase in productivity and the more complete the money illusion.

If price and wage rates are rising, and unemployment declining, the situation is ambiguous. The declining unemployment could be due either to dominance of demand-pull forces, on the one hand, or to (a) strong cost-pull effects of a small gap between the increase in wage rates and productivity,²⁵ or to (b) strong cost-pull effects of rising wage rates and prices if consumers are real-income conscious.²⁶

Under certain conditions, even in this case, it could be argued that demand-pull is responsible. First, a rapid rise in employment almost certainly indicates demand-pull since it is unlikely that the positive employment effects of cost-pull could so overwhelm the negative effects of cost-push. Second, rising employment from a very high level of unemployment to begin with also indicates demand-pull because at high levels of unemployment wage pressures are weak or nonexistent and by themselves could not start a recovery.²⁷

consciousness implies no decline in employment from a wage increase so long as the marginal propensity to spend of workers is greater than that of profit-receivers. Aside from pointing out that complete real-income consciousness is as unrealistic as complete money-illusion, it should also be noted that this result also depends on the assumption that all of the price effects of the wage increase precede the spending effects. In actual fact, of course, part of the income increase will be spent at the old prices or at some intermediate level of prices short of the final price adjustment due to the wage increase.

²⁵ With money illusion and therefore no output effects of the productivity increase.

²⁶ The output and cost-pull effects of a large increase in productivity tending to offset each other.

²⁷ Some final qualifications: Our analysis has indicated the *direction* but not the magnitude of the impact on employment of wage and demand changes. It may often be the case that the

Finally, if cost-push leads to rising unemployment, as we believe it usually does, then it is bound to be a very short-run phenomenon. This is because the rising level of unemployment rapidly robs labor of its power to "push" up wages and prices. If substantial cost-push is generated and largely offsets the unemployment effects of the cost-push, then of course, the "push" may sustain itself for a much longer period of time. It seems unlikely, however, that a cost inflation could, in fact, continue uninterrupted for more than a few years (in the United States); over any longer period, cost-push forces are almost certain to be supplanted by stronger negative or positive cyclical demand forces.

IV. *The U.S. Economy, 1955-58*

We will briefly examine the U.S. inflation in this period in order to show the usefulness of the general conceptual approach developed above²⁸ and to evaluate alternative approaches. We will begin with the last 2 years of the period since they are the easiest to analyze.

The inflation from March 1957 to August 1958 seems to have been caused, unambiguously, by cost-push. Unemployment (adjusted) rose from 3.9 per cent in March 1957 to 7.6 per cent in August 1958 with only a brief decline in May-June 1958. Unemployment was accentuated from March 1957 until April 1958 by a 4 per cent decline in average weekly hours of work in manufacturing. Concomitantly, average hourly earnings in manufacturing and the CPI (consumer price index) each rose by almost 4 per cent and the WPI (wholesale price index) by about 2 per cent. An important contributing factor to the rising unemployment was the drop in demand.²⁹ Both private domestic investment and net foreign investment fell sharply and were not at all compensated for by the gradual rise in government purchases. While declining demand contributed (along with cost-push) to rising unemployment, it must also have constituted a drag on prices and wage rates. That prices and wage rates rose at all during this period, therefore, must be attributed to the dominance of cost-push.

L. E. Gallaway [4] rejects cost-push or what he calls the "unqualified wage-push inflation thesis" for 1950-1957. His reasoning as applied to 1957 at least, is based primarily on the mistaken premise that no

employment effects of either force operating in isolation may be too small to allow one to say with any confidence what type of inflation is being experienced. Difficulties are compounded when both forces are operating simultaneously on the economy; likewise when, as indicated earlier (fn. 6), the two forces take turns so that the impact of neither has time to build up a measurable impact on the level of employment.

²⁸ While the detailed model cannot, of course, be readily applied to real situations for lack of data, the deduced results and general framework are readily applicable.

²⁹ I am using quarterly changes in real GNP minus changes in business inventories as well as changes in the individual components of GNP as a crude indicator of changes in demand. These data are taken from [9].

change in the number of unemployed occurred. In fact, he assumes that the whole period, 1950-1957, was one of "relatively full employment" implying by this that no significant variations occurred. He arrives at this conclusion from observation of annual average rates of unemployment.³⁰ Certainly, annual average rates are inadequate for the analysis of this problem.

From his judgment of "relatively full employment," Gallaway argues that the unqualified wage-push hypothesis requires either that (1) the income effects of the wage increase or (2) some exogenous increase in demand just offset the unemployment effects of the wage-push. He rejects (1), though it seems a reasonable possibility a "relatively full employment," primarily on the grounds that government expenditures and government debt had increased from 1950 to 1957 and these constituted, in his opinion, the exogenous demand forces that give us "relatively full employment." However almost all of the increase in government expenditures over 1950-57 took place in 1951 and 1952; expenditures in 1957 were \$1 billion more than in 1952 and \$1 billion less than in 1953.³¹ Furthermore, the budget ran surpluses in 1956 and 1957. Had Gallaway examined the fiscal data for the period 1950-57 on a quarterly or annual basis and the unemployment data on a monthly or quarterly basis, I feel certain that he would have been led to a different conclusion at least for 1957.³²

R. T. Selden [7] supports, in part, the cost-push explanation for 1957 though for a somewhat different reason.³³ He disaggregates the increase in wholesale prices into its various subgroups finding that the largest price increases were experienced in the farm and processed food subgroups. A major factor in the rise of meat prices, he finds, was the voluntary withholding of livestock from the market which, he argues

³⁰ I would even disagree with this conclusion on the basis of his annual average rates. Certainly his 2.51 per cent for 1953 is of a different order of magnitude from the 5.01 per cent for 1954 [4, p. 968 n.].

³¹ Expenditures fell sharply in 1954 and rose again from 1954 to 1957.

³² Gallaway may have been thinking of the long-run impact of cost-push forces. It seems clear, however, that the long-run impact of cost-push cannot be detected easily in terms of its impact on the level of unemployment for two reasons. First, since the strength of cost-push is largely a function of the level and direction of change of unemployment, the greater the unemployment effect of the cost-push, the quicker the process peters out as labor loses the power to push up wages. The unemployment criterion is only useful in the short run. Second, if substantial cost-pull develops, the impact of the wage increase on unemployment will be negligible or unemployment may even be reduced. It would seem, incidentally, that the larger the cost-pull, the greater the impact of wage-pushes on the long-run level of wages and prices and the lower the price stability of the economic system.

³³ Selden's arguments are very involved because he is concerned with demonstrating the relative effects of cost and demand changes on the quantity and especially the velocity of money. His general line of reasoning and his arguments are much too long and detailed to be reproduced here.

and I think correctly, is analogous to an autonomous cost change such as a wage-push. I would accept this as an additional factor in favor of the cost-push for 1957.

I find it hard to characterize the year 1955 as "inflationary."³⁴ The CPI showed no rise at all and the WPI rose by only a fraction of one per cent. With respect to demand, gross private investment and personal consumption rose very sharply while net foreign investment and government purchases remained fairly stable. At first glance, one would be inclined to attribute the less than one per cent rise in prices, 5 per cent rise in wages, decline in unemployment from 4.9 to 4.1 per cent, and $2\frac{1}{2}$ per cent increase in hours worked per week entirely to the sharp increase in autonomous demand as evidenced primarily by the substantial increase in private domestic investment and in personal consumption. Certainly, these were the major inflationary forces. The anomalously small increase in prices may be attributed to the enormous increase in output per man-hour in manufacturing which occurred in 1955—an increase of 5.8 per cent [3, p. 366]. This productivity increase completely offset the wage-rate increase in manufacturing.

But consider the following additional factors and interpretation. The large rise in productivity tended to blunt the cost-push negative effects and to accentuate the cost-pull positive effects of the wage increase on employment. The large cost-pull which resulted thereby contributed to the increase in personal consumption which occurred in 1955 and which on casual observation appeared to have been entirely demand-pull. To put it another way, had productivity not increased by such a large percentage in 1955, prices would have risen more rapidly due to the wage increase and unemployment would not have declined by as much—might even have risen. This would have been a picture much closer to that of a cost-push inflation. In other words, there may well have been some cost-push but its impact was disguised by the rapid increase in productivity which reduced the price rise and contributed through cost-pull to the large increase in spending. While I agree that demand factors predominated in the 1955 inflation, I do feel that the very strong cost-pull forces cannot be ruled out as an important contributing factor.

The year 1956 was definitely inflationary with a 6 per cent increase in wage rates, 3 per cent in CPI and 4 per cent in WPI. Real expenditures increased by a small amount, money expenditures rather sharp¹ over the year. The level of unemployment remained stable, at about 4 per cent fluctuating by only fractional amounts as did average weekly hours worked. In terms of the crude indicator developed in this paper,

³⁴ Selden also considers, in detail, the 1955-56 period. He feels that whatever inflation characterized this period was demand inflation. I agree, on the whole, but think that cost factors were also partly responsible in 1955 though not in 1956.

it would be impossible to choose on the evidence presented so far, between cost and demand forces. Two additional factors must be introduced: (a) the productivity increase in 1956 of .4 per cent was the smallest of the postwar period; (b) the increase of 1.9 million in the nonagricultural labor force was the largest since 1947. If there had been any cost-push, the small increment to productivity would imply relatively little positive cost-pull, and therefore some unemployment effects. That unemployment did not decline despite this and the more than 3 per cent rise in the nonagricultural labor force implies that strong demand forces were at work and were predominantly responsible for the wage and price rises which occurred.

Selden argues that if a cost change is responsible for a price increase, output should fall. On the other hand, if demand is responsible, output should rise. He then proceeds to correlate changes in industrial output with changes in wholesale prices on an industry-by-industry basis for 1955-56. He finds a positive relationship between the two variables, with a correlation coefficient of $+ .4$. Since output typically increases in industries which experienced price increases, he concludes that demand-pull is responsible for the inflation.

While Selden showed considerable ingenuity in devising his test (which is only one part of his argument) I have one reservation regarding its general validity. Selden's method takes no account and shows no awareness of the possibility of cost-pull effects associated with a cost-push, and these may have been unusually strong, as we have already noted, in 1955 because of the large increase in productivity in that year. To take an extreme example, if there were no increase in autonomous demand, and if wage increases were just offset by productivity increases, the resulting cost-pull would still cause increases in prices and output and these would be positively correlated.

There is another type of argument from disaggregated data which is even more fraught with pitfalls. Many persons have argued that the recent inflation must have resulted from demand-pull because the largest price increases have occurred in industries (e.g. the service industries) least dominated by strong unions and oligopolistic producers. But the amount by which price will rise and output will change in a particular enterprise due to rising wages will depend not only on the size of the wage increase in that enterprise but also on (1) the original level of profits in each industry, (2) the increment in output per man-hour in each industry since the previous wage increase, (3) the percentage of wage cost to total cost by industry, (4) the change in aggregate demand due to the national wage increase (cost-pull), and associated with this (5) the income-elasticity for the product of the particular enterprise.

APPENDIX

1. Write national income, Y_t , as the sum of wages and profits:

$$(a.1) \quad Y_t = W_t + V_t.$$

On the expenditure side (income = expenditure) write:

$$(a.2) \quad Y_t = C_t + I_t + X_t + G_t.$$

where all components of Y_t are for domestically produced goods.

Write consumption and investment equations:

$$(a.3) \quad C_t = mW_{t-1} + vV_{t-1}.$$

$$(a.4) \quad I_t = v'V_{t-1} + I(a)_t.$$

Let the wage rate rise, increasing total wages paid and changing the level of profits:

$$(a.5) \quad W_{t-1} = W_{t-2} + N_{t-2}\Delta w(1 - e).$$

$$(a.6) \quad V_{t-1} = V_{t-2} - kN_{t-2}(\Delta w - \Delta r)(1 - e).$$

Substituting (a.5) and (a.6) in (a.3) and (a.4):

$$(a.7) \quad C_t = m[W_{t-2} + N_{t-2}\Delta w(1 - e)] \\ + v[V_{t-2} - kN_{t-2}(\Delta w - \Delta r)(1 - e)].$$

$$(a.8) \quad I_t = v'[V_{t-2} - kN_{t-2}(\Delta w - \Delta r)(1 - e)] + I(a)_t.$$

Substituting in (a.2) and consolidating:

$$(a.9) \quad Y_t = mW_{t-2} + \bar{v}V_{t-2} + mN_{t-2}\Delta w(1 - e) \\ - \bar{v}kN_{t-2}(\Delta w - \Delta r)(1 - e) + I(a)_t + X_t + G_t.$$

The change in national expenditure due to a wage increase and assuming no change in autonomous expenditures is:

$$(a.10) \quad Y_t - Y_{t-1} = mN_{t-2}\Delta w(1 - e) - \bar{v}kN_{t-1}(\Delta w - \Delta r)(1 - e).$$

Equation (a.10) is the same as (8) in the text.

2. The model presented can be viewed as consisting of the following:

Unknowns: $Y, C, N, V, W, I, e, k, d, d', v', w$.

Exogenously given parameters and variables: $X, G, I(a), m, v$.

Equations: The 12 equations which determine the unknowns are (1)–(5); (a.1)–(a.4);

$$(a.11) \quad W = Nw$$

$$(a.12) \quad v' = f_v(N, V)$$

$$(a.13) \quad \Delta w = f_{\Delta w}[N, \Delta X, \Delta G, \Delta I(a)].$$

REFERENCES

1. R. G. D. ALLEN, *Mathematical Economics*. London 1956.
2. MARTIN BRONFENBRENNER, "A Contribution to the Aggregative Theory of Wages," *Jour. Pol. Econ.*, Dec. 1956, 64, 459-69.

3. OTTO ECKSTEIN, "Inflation, The Wage-Price Spiral and Economic Growth," *The Relationship of Prices to Economic Stability and Growth*, a Compendium of the Joint Economic Committee, Washington 1958, pp. 361-74.
4. L. E. GALLAWAY, "The Wage-Push Inflation Thesis, 1950-1957," *Am. Econ. Rev.*, Dec. 1953, 48, 967-71.
5. BENT HANSEN, *A Study in the Theory of Inflation*. London 1951.
6. K. W. ROTHSCHILD, "Aggregative Wage Theory and Money Illusion," *Jour. Pol. Econ.*, Oct. 1957, 65, 442-45.
7. R. T. SELDEN, "Cost-Push versus Demand-Pull Inflation, 1955-57," *Jour. Pol. Econ.*, Feb. 1959, 67, 1-20.
8. R. TURVEY AND H. BREMS, "The Factor and Goods Markets," *Economica*, Feb. 1951, N.S. 18, 57-68.
9. *Economic Report of the President*, Annual Reports, Washington, D.C.

THE MEANING AND VALIDITY OF THE INFLATION-INDUCED LAG OF WAGES BEHIND PRICES

By R. A. KESSEL AND A. A. ALCHIAN*

Many economists write as if the proposition that inflation causes prices to rise faster than wages were well established. From this proposition at least two important classes of inferences have been derived.

1. A lag of wages behind prices as a result of inflation produces extraordinarily large business profits. These swollen profits generate a high rate of capital formation. In this role, the wage-lag axiom constitutes the foundation of a theory of industrial development.

2. The lag of wages behind prices caused by inflation accentuates oscillations in the general level of economic activity. The failure of wages to keep pace with prices reinforces disequilibrating movements in the general level of economic activity. In this capacity, the wage-lag axiom functions as an integral part of both overinvestment and underconsumption business cycle theories [14, p. 137 and ff.].

The contention that inflation causes real wages to fall appears frequently in the literature of economics. Those who make this contention argue in effect that inflation produces a negative correlation between real wages on the one hand and money wages and prices on the other. As a practical matter, it is extremely difficult to employ this idea as a tool of analysis for understanding observed movements of time series of wages and prices. This difficulty stems from the fact that, as almost everyone would agree, the level of real wages can be affected by such real forces as the relative supplies of labor and capital, the quality of the labor force, the pattern of final demands in the economy, and the state of the arts. Furthermore, increases in the general price level can be produced by changes in the real stock of goods, e.g., by droughts, plagues, wars, etc., even with a fixed money stock. For any time series of real wages, there exists a fantastically difficult problem of imputing changes in the level of real wages to one or the other of two classes of

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variables, i.e., real or monetary forces. Only if one is able to abstract from the effects of real forces can one determine the effect of inflation upon an observed time series of real wages.

To illustrate this problem, consider the data showing real wages, money wages, and prices in the United States since 1889 [39, pp. 15-16]. These data indicate a high positive correlation between real wages on the one hand and money wages and prices on the other. Are these positive correlations to be interpreted as evidence against the proposition that inflation causes real wages to fall? Surely not. Real wages rose during this time, according to most observers, because of the per capita increase in capital, improvements in technology, and improvements in the skills of the labor force. Those who believe that inflation causes real wages to fall would not deny this. Their position would be that real wages rose despite inflation and that if the effects of real forces upon real wages were properly abstracted, one could observe a fall in real wages attributable to inflation.¹

I. *Some Alternative Wage-Lag Hypotheses*

What, then, is the wage-lag hypothesis? To answer this question, we have turned to the works of those economists who have used this idea. The most important "explanation," importance being measured by either the extent to which it has been used or its deviation from the way economists explain behavior in nonlabor markets, is the belief that wages have more "inertia" or "sluggishness" than other prices because of custom, weak bargaining power of labor, or lack of foresight of workers. For example, Hamilton states: "The chief factor in the failure of wages to keep pace with soaring prices in the second half of the eighteenth century was the 'natural' inertia of wage movements in both directions. History records few instances of wage movements in unison with rapidly changing commodity prices" [18, p. 259]. And:

There have been no such offsets to the strong tendency during most of the last four hundred years for wages to lag behind prices whenever they were rising. This lag has benefited capitalists as a class at the expense of laborers as a class and awarded gains that dwarf into insignificance the profits from inventory appreciation and from declines in the real value of debts. A tendency for wages to lag behind falling prices has inflicted losses on businessmen, discouraged saving and investment, and aggravated commercial crises [20, p. 327].

Mitchell also contended that an imperfection exists in the labor market. He wrote:

¹ Or for a less recent inflation, consider the Black Death period. During this time prices rose and real wages rose. Clearly what explains this phenomenon is the decrease in the stock of labor which also produced a fall in rents. See Lipson [30, pp. 93 and ff.].

In the '60's and, though in somewhat less degree, in the '70's, the labor market of the United States was one in which individual bargaining prevailed. Now the individual laborer is a poor bargainer. He is ignorant of the possibilities of his situation, exposed to the competition of others with the same disabilities, more anxious to sell than the employer to buy. Moreover, custom in the form of rooted ideas about what is a "fair wage" has a peculiarly tenacious hold upon the minds of both parties in the labor market, weakening the wage-earner's aggression and strengthening the employer's resistance [35, pp. 275-76].

In his study of the Civil War, Mitchell concluded: "All of the statistical evidence that has been presented in the preceding pages supports unequivocally the common theory that persons whose incomes are derived from wages suffer seriously from a depreciation of the currency" [34, p. 347]. Basically, the rationale for this position is that there exists a flaw in the labor market which, during times of inflation, lowers the wage rate below the marginal product of workers. In effect Mitchell and Hamilton are saying that the same principles economists use in explaining what happens in other markets are invalid for explaining what happens in labor markets during inflation.²

Bresciani-Turroni enunciated, in his famous study of German inflation, a hypothesis that could explain declines in real wages during inflation and be consistent with a perfectly functioning labor market.³ This hypothesis rests on the postulate that employees, as a condition of employment, are almost invariably creditors of their employers. And as creditors, employees lose to their employers for the same reason that creditors generally lose to debtors as a result of inflation. Therefore, even if wage rates correctly represented the marginal product of workers, the fact that wages accrue, i.e., that wages are paid after they are earned, implies that workers extend credit to their employers and incur a loss on this account.

There exists strong *prima facie* evidence for accepting the wage-accrual hypothesis of Bresciani-Turroni. This explanation rests upon a debtor-creditor relationship that is essentially similar to debtor-creditor relationships between, say, department stores and their charge customers, finance companies and the credit purchasers of automobiles and other appliances, corporations and their bond holders, etc. Since there already exists evidence that supports the belief that interest rates are biased downward during inflation, because of the public's lack of

² Explanations of this type may be found in [31, p. 7 and *ff.*] [41, p. 213] [6, p. 380] [29, p. 222] and [32, p. 88].

³ "In fact, wages were fixed on the basis of an index number of prices which, at the time of payment, no longer represented actual conditions" [7, p. 310]. It failed to represent actual conditions because of the bias in interest rates. Also he argued that wage earners lost because they held cash during inflation [7, p. 302]. Both of these are of course special cases of the proposition that creditors lose during inflation.

knowledge of the course of future prices, there appears to be a reasonable basis for accepting the proposition that wealth is transferred from employees to employers when inflation occurs.⁴

As a practical matter, it does not appear that this relationship between employees and employers, at least in modern times, has the potential for transferring a great deal of wealth from employee to employer. Consider a case that is most favorable for sustaining the proposition that accrued wages constitute an important source of business profits during inflation. Assume that cash is acquired for wage payments at the very instant these payments are made by a business firm. Therefore this firm may be regarded as a consistent net debtor with respect to its employees.

What can be said about the magnitude of such profits under these assumptions? Of all industrial firms listed on the New York Stock Exchange in 1952, approximately 200 reported the size of their aggregate wage bills, or more properly the size of their aggregate wage and salary bills, for at least one year between 1939 and 1952. Among these 200 firms, the ratio of total annual wages to equity (equity being measured by the market value of outstanding shares) ranged from a low of .1 to a high of about 4, depending upon firm and industry. If it is assumed that wages are paid biweekly, then the average amount of wages and salaries accrued is 1/52 of the annual wage bill. Consequently it follows that accrued wages range from a low of about .2 per cent to 8 per cent of equity. This analysis implies that if the price level doubled in any given year, the real value of stock prices would rise from a minimum of .1 per cent to a maximum of 4 per cent.⁵

Using this same debtor-creditor relationship, Fisher had earlier set forth still another explanation of why real wages would fall during inflation. Like the Bresciani-Turroni explanation, Fisher's was consistent with a perfectly functioning labor market. Fisher contended that relations between employer and employee can be viewed as being contractual, just as are economic relations between, say, bondholders and those who incur bonded debt [10, p. 185 and *ff.*]. The same lack of foresight that would lead to too low an interest rate to permit debtor-creditor relations to be unaffected by inflation would lead to an effective

⁴ This of course does not imply that business firms gain through inflation. Such a statement would be correct only if an examination of all of their debtor-creditor relations, of which relations with employees are only a part, revealed that business firms are on balance debtors. On this point, as well as for evidence that interest rates are biased during inflation, see Kessel [23, p. 128]. Nor does the "bias" of interest rates imply any defect in the capital market; instead it reflects people's inability to predict future prices.

⁵ The Bresciani-Turroni hypothesis also appears in Meyer [33, p. 17]. "Creditors lost in inflation. Wage-earners and salary-earners normally work before they are paid. They lend their labour until pay day; their work is work given on credit." Meyer also asserts that wages lag because of contractual arrangements between employers and employees.

wage below the marginal product of labor when prices are rising. Only at the time wage contracts are signed would wages be equal to the marginal product of labor. Between contract negotiations, real wages would fall as a result of rising prices.

Prima facie evidence does not support this hypothesis. Wage contracts are typically nonenforceable when broken by employees. Consequently, the legal reasons for arguing that contracts between employers and employees are on a par with contracts between creditors and debtors are of dubious validity. As far as employees are concerned, wage contracts have generally been continuously renegotiable, at least until relatively modern times. Employees can almost always leave their current jobs in favor of alternative employment possibilities in complete freedom from legal sanction by employers. Consequently, in the absence of other evidence there is very little basis for accepting Fisher's hypothesis.

However, there is more to a substantive hypothesis than its logical structure. In its broader aspects, the Fisher hypothesis implies that during inflation there exists a differential in the movements of wage rates of workers under contract as compared with workers employed without contract. It also implies that the longer the life of a contract, the greater the differential in the movements of real wages during inflation. No evidence is contained in this paper for evaluating these two implications.

If one abandons a legalistic frame of reference and argues, as Fisher has, that custom plays a great role independent of contractual arrangements, then this hypothesis becomes indistinguishable from the argument of Hamilton and Mitchell, namely, that a flaw exists in the labor market which manifests itself during times of inflation by a fall in real wages.

The use of inflation as a means of taxation appears to have created a belief that inflation causes real wages to fall. Inflation is a means of taxation, and has been used by those who control the stock of money as an alternative to explicit forms of taxation, such as income taxes, excises, tariffs, etc. Using their power to create money, governments have exchanged money for real resources. Such an exchange reduces the volume of real resources available to the private sector of the economy. The mere existence of an exchange of this character has led many observers to conclude that a fall in real wages is necessarily implied [e.g. 25, pp. 171-74]. Yet it can and has been shown that taxation through inflation is consistent with no reduction in real wage rates.*

* A discussion of the mechanism by which the government acquires resources from the rest of the community through inflation has been presented in [1]. For the first published analysis of this mechanism that the authors have encountered, see the revised portion of Friedman [11, p. 263]. See also Cagan [8].

Inflation constitutes a tax upon monetary wealth and not upon wages or other factor incomes. This tax affects the real functional returns of the cooperating agents of production if inflation is anticipated, i.e., when the increased cost of holding money caused by rising prices is recognized and enters into the calculations of the community. Under these circumstances, both velocity and the nominal or money rate of interest rise. These higher costs of using money are ultimately reflected in a rise in product prices relative to the sum of the returns to the cooperating agents of production. Whether or not real wages fall depends upon the cross elasticity between the price or cost of holding money and the quantity of labor demanded. If one is prepared to argue that capital is a better substitute for money than labor, and to assume that the alternative to inflation as a means of taxation is no tax or a wealth or income tax, then the argument that anticipatory inflation can cause real wages to fall can be sustained.

However if inflation is not anticipated, then the losses of the money holders are on a par with an *ex post facto* penalty or Knightian profits and do not affect resource allocation. In general, it appears that the inflations associated with our Civil War in the North and our two world wars were unanticipated. If excise taxes or turnover taxes are regarded as the alternative to taxation through an unanticipated inflation, then inflation implies a higher level of real wages than would otherwise be true.

II. The Empirical Evidence

The remainder of this paper falls into two parts: (1) a review of the statistical evidence that has been used to support the Mitchell-Hamilton hypothesis and (2) a new test of this hypothesis based on differences in the labor intensiveness of business firms and the performances of their stock prices during inflation.⁷

⁷ The field of income and employment theory contains still another hypothesis that implies the existence of a lag of wages behind prices when prices are rising. It stems from the observation that less than full employment, where full employment is defined as a labor market in which everyone who wants a job at the prevailing wage rate can find one, implies nonprice rationing of employment opportunities. This is consistent with an infinitely elastic supply function of labor that relates the quantity of labor offered with money wages if rising prices will restore full employment. Under these assumptions, increases in prices at times of less than full employment imply a fall in real wages.

This hypothesis is clearly relevant to the present discussion, if it is relevant at all, only for inflations or portions of inflations associated with less than full employment. Since the authors cited believe that inflation causes wages to lag behind prices independently of whether full or less-than-full employment exists, this is not a hypothesis they considered extensively although it appears in the work of Mitchell and Bresciani-Turroni.

This model leads to difficult questions. One is: Shouldn't the wages of unemployed workers be considered in the wage index? If they are included in the wage index, then it is not clear that real wages decline under these circumstances. Another difficulty is that we do not know enough about how an economy returns to full employment to impute to inflation a fall in real wages of those continuously employed. Possibly real supply conditions have not

What is the empirical evidence used to support the hypothesis that inflation, independently of real forces, causes real wages to fall when prices are rising? Major data used to support this hypothesis have been collected for six inflationary episodes: (1) the period from 1350 to 1800 in Spain, (2) the early days of the industrial revolution in England, (3) the U.S. Civil War in the North, (4) the U.S. Civil War in the South, (5) the German inflation following the first world war, and (6) the inflation in the United States associated with the first world war.

A. Spanish Data

E. J. Hamilton probably has contributed more to the acceptance of the hypothesis that inflation causes real wages to fall than has any other single economist.⁸ His evidence consists almost entirely of time series of wages and prices. In order to use such data as evidence of a wage lag, the impact of real forces must be distinguished from that of inflation. Hamilton is not unaware of this difficult problem of imputation. Throughout his monumental three-volume work on Spanish wages and prices, which covers the interval from 1350 to 1800, are references to real forces and their impact upon the price level and real income [17, pp. 100-4]. Yet, as far as we can discover, he consistently forgets about real forces when using his time series to test the hypothesis; any fall in real wages when prices are rising he interprets as evidence supporting the wage-lag hypothesis.

Yet even with this implicit assumption that real forces are constant during inflation and consequently any change in real wages is attributable to inflation, Hamilton's data in his study of Spanish wages and prices fail in large part to support his thesis.⁹ Of the three areas studied in the first episode from 1350-1500, Valencia, Aragon, and Navarre, only Navarre incurred inflation during this time. He concludes: "The greatest anomaly disclosed by the present study is the complete failure of wages to lag behind prices in any of the kingdoms during a single period of upheaval. In fact, Navarrese wages advanced much faster than prices in the last decade of the fourteenth century" [17, p. 203].

For the second period, 1501 to 1650, he concludes: "With few interruptions, the trend [in real wages] was downward from 1520 to 1600" [16, p. 280]. And, "The calamitous depreciation of the inflated Castilian vellon and debased Valencian silver coinage in 1623-1650 impaired the economic welfare of workers no less catastrophically than had the

changed but demand conditions have changed. Real aggregate demand could increase, through an increase in the nominal monetary stock, and with an infinitely elastic aggregate supply function, full employment would be restored with no fall in real wages.

⁸ This view runs through most of his works. See particularly [18, p. 256] [20, pp. 335-36].

⁹ In the ensuing examination of his statistical results, the reported data will be taken at face value. However, the statistical procedures employed merit more extended critical examination than is possible here.

TABLE 1—COMPOSITE INDEX OF REAL WAGES*
Base 1571–1580, Period 1501–1650

Year	Year	Year	Year	Year	Year
1501 112.78	1526 105.66	1551 100.27	1576 103.47	1601 100.88	1626 101.15
1502 115.55	1527 102.26	1552 98.64	1577 106.52	1602 108.68	1627 97.82
1503 118.96	1528 106.62	1553 102.76	1578 102.95	1603 112.80	1628 102.44
1504 111.56	1529 100.15	1554 108.40	1579 97.81	1604 111.94	1629 104.22
1505 108.62	1530 91.35	1555 110.41	1580 102.86	1605 112.10	1630 109.31
1506 92.47	1531 94.39	1556 109.60	1581 104.43	1606 116.80	1631 110.89
1507 99.68	1532 99.40	1557 100.66	1582 101.12	1607 119.60	1632 107.79
1508 102.75	1533 106.25	1558 101.75	1583 100.09	1608 121.35	1633 111.11
1509 117.06	1534 102.43	1559 111.05	1584 102.48	1609 127.83	1634 113.47
1510 127.84	1535 114.03	1560 110.75	1585 102.22	1610 125.49	1635 114.60
1511 120.80	1536 104.49	1561 102.02	1586 106.01	1611 130.56	1636 111.63
1512 126.85	1537 108.19	1562 96.50	1587 103.14	1612 127.96	1637 105.83
1513 125.48	1538 99.82	1563 100.96	1588 111.63	1613 128.09	1638 105.86
1514 122.34	1539 104.06	1564 102.12	1589 107.31	1614 122.85	1639 110.81
1515 118.56	1540 102.30	1565 101.27	1590 105.85	1615 126.57	1640 111.59
1516 120.62	1541 103.73	1566 99.22	1591 107.70	1616 121.45	1641 106.13
1517 123.87	1542 98.23	1567 103.37	1592 104.12	1617 119.81	1642 98.07
1518 118.36	1543 97.24	1568 105.80	1593 107.07	1618 122.90	1643 101.30
1519 119.77	1544 101.45	1569 108.14	1594 106.47	1619 127.08	1644 102.45
1520 125.56	1545 105.14	1570 105.56	1595 106.29	1620 121.61	1645 105.91
1521 112.61	1546 98.36	1571 99.58	1596 103.84	1621 122.11	1646 102.07
1522 104.81	1547 99.28	1572 100.02	1597 99.00	1622 121.85	1647 103.10
1523 109.89	1548 95.54	1573 97.40	1598 93.02	1623 120.16	1648 98.20
1524 109.36	1549 93.61	1574 100.11	1599 91.40	1624 114.64	1649 97.53
1525 106.87	1550 97.61	1575 94.18	1600 91.31	1625 113.82	1650 93.30

* Reproduced from Hamilton [16, p. 278], with permission of Harvard University Press.

influx of American gold and silver in the last eight decades of the sixteenth century" [16, p. 282]. However again, and once more holding real forces constant, Hamilton's conclusion is not supported by his data. While it is strictly true that real wages as reported by Hamilton were lower in 1600 than they were in 1520, the trend he reports is absent from his data. The reason he gets the results that he does is that 1520 is a year when real wages were exceptionally high when compared with the years immediately preceding and succeeding 1520. On the other hand, 1600 appears to be a year when real wages were exceptionally low when compared with the years immediately preceding and succeeding 1600. If real wages in 1522 are compared with real wages in 1602, then one can conclude that real wages rose. The results Hamilton obtained can be obtained from random series. There is no downward trend in real wages nor any coincidence of wages lagging with inflation.¹⁰ Hamilton's data for the episode are reproduced in Table 1.

¹⁰ Alternatively one might say that the base year for Hamilton's observations had a strong plus random factor and the final year a strong minus random factor, and what he attributes to inflation can be attributed very easily to sampling error. In statistical jargon, he commits the regression fallacy.

In his third volume, Hamilton covers the time interval from 1651-1800 and he finds that real wages declined in the urban areas, Madrid and Valencia, in the second half of the eighteenth century. What happened to real wages for the country as a whole is unclear since real wages rose in some rural areas and presumably the country as a whole was predominantly rural [19, p. 210]. The second half of the eighteenth century was characterized by rising prices. However it was also a time when the Spanish population was increasing sharply; it doubled during this century, and was associated with migration from rural to urban areas [19, p. 216]. Consequently one would expect, in the absence of any imperfections in the labor market, that such a population increase would lower real wages. Yet Hamilton did not disentangle the effects of this population increase from the effects of inflation upon real wages, and he concluded in the final sentence of his last volume:

By involuntarily sacrificing real income through the price-wage squeeze, the laboring class bore the burden that implemented material progress, just as laborers and peasants in Soviet Russia, sacrificing through governmental directives, have largely financed the mechanization of industry that was instrumental in the recent expulsion of German invaders [19, p. 225].

B. English and French Data

Hamilton buttresses his conclusions about the effect of inflation upon industrial development by citing similar effects for England and France during inflations that occurred in these countries. Specifically, in his third volume he says:

The concurrence of profit inflation and of rapid economic development in England and France tends to confirm the thesis that the lag of wages behind prices was an important factor in the great material progress in Spain during the second half of the eighteenth century [19, p. 224].

Again, even if the potential impact of real forces upon wage-price relationships is ignored, can it be said that wages fell during the inflation in England?

Hamilton's study of the movement of prices and wages in London between 1729 and 1800 indicates that real wages fell.¹¹ Mrs. Gilboy, however, who also studied prices and wages in England at this time, supports Hamilton's findings of fact but not his conclusions [12, pp.

¹¹ [18, p. 259]. One of the relevant problems for analyzing Hamilton's data, which he fails to discuss, is the fact that he has more observations, typically, in his price than in his wage index. Consequently, if the price and wage observations change with the same degree of frequency, say once a year, it will appear, falsely, as if wages were lagging behind prices. This error accounts for much of the intuitive appeal of the wage-lag hypothesis. If during inflation one sees prices moving up day by day whereas one's own wage rate changes once a year, the conclusion that wages lag behind prices during inflation is difficult to resist.

TABLE 2—INDEX NUMBERS OF PRICES AND WAGES IN ENGLAND, 1500-1702*
(Index for 1451-1500 = 100)

Period	Prices	Wages
1501-1510	95	95
1511-1520	101	93
1521-1530	113	93
1531-1540	105	90
1541-1550	79	57
1551-1560	132	88
1561-1570	155	109
1571-1582	171	113
1583-1592	198	125
1593-1602	243	124
1603-1612	251	124.5
1613-1622	257	134
1623-1632	282	138.5
1633-1642	291	152.5
1643-1652	331	175
1653-1662	308	187
1663-1672	324	190
1673-1682	348	205.5
1683-1692	319	216
1693-1702	339	233

* Reproduced from Hamilton [15, p. 352], with permission of London School of Economics and the author.

191-215]. She found that real wages fell in London and rose in the north of England [12, pp. 191-215]. Therefore she concluded: "Generalizations as to what happened to English wages as a whole must at present meet no little skepticism."¹² Her findings were particularly damaging to Hamilton's interpretation of the implications of a fall in real wages during inflation. Capital formation in the north of England was especially high, whereas Hamilton's hypothesis implies that capital formation ought to have been particularly low in this area.¹³

Hamilton has also examined data for an earlier period of English history, 1500 to 1702 [15, p. 351, Chart 1]. Will these data support the hypothesis that inflation causes wages to lag behind prices if one abstracts from the effects of real forces? (See Table 2.) Taking the period as a whole, Hamilton is right. Real wages declined. However, virtually all of the decline occurred during the first 50 years of this period, and it is unclear whether this shorter time interval ought to be regarded as being on net balance inflationary or deflationary. Prices

¹² [12, p. 227]. In a paper dealing with this same issue, Mrs. Gilboy puts the case even more forcefully. "Sufficient data are not at present available to make any statements concerning the movement of real wages in England as a whole for this period" [13, p. 141].

¹³ For a partially overlapping time period, 1790-1830, Ashton does not believe that real wages declined [4, p. 158].

TABLE 3—INDEX NUMBERS OF PRICES AND WAGES IN FRANCE, 1500-1700*
(Index for 1451-1500 = 100)

Period	Prices	Wages
1501-1525	113	92
1526-1550	136	104
1551-1575	174	103
1576-1600	248	113
1601-1625	189	113
1626-1650	243	127
1651-1675	227	127
1676-1700	229	125

* Reproduced from Hamilton [15, p. 353], with permission of London School of Economics and the author.

were about 17 per cent lower at the end of these 50 years than they were for the base observation. The first 40 years were inflationary, and real wages fell. However, the next 10 were deflationary, and real wages fell even more. Again these data will not support even this very simple conception of the wage-lag hypothesis.¹⁴

Tucker studied real wages in London during the latter half of the eighteenth century but has no data for the country as a whole [40]. In view of Gilboy's findings, his data are not of great relevance for England as a whole. Tucker, for reasons quite different from Hamilton's, was interested in testing the hypothesis that real wages fall as a result of rising prices. However, every time he observes a fall in real wages, he is able to explain this fall by real factors such as poor crops, resources consumed by wars, etc. [40, p. 82, for example]. Yet he ignores these explanations when drawing his conclusions.

For France, Hamilton does have data that unambiguously show that real wages fell [15, p. 353]. (See Table 3.) However his explanation of why they fell is not supported by related evidence. His hypothesis implies that the larger the fall in real wages, the greater the rate of industrial development. Differences in the rates of capital formation between England and France ought, therefore, to be related to differences in

¹⁴ Using time series of wages and prices as Hamilton does involves the vexing question of how to choose one's starting point or base observation. Presumably one wants to start observations when prices start to rise. But the trough of a price series is usually determined by random components. This produces a transitory peak in the real wage series; the subsequent decrease, if interpreted as a lag, provides an example of the regression fallacy. Only by averaging out transitory or random variations about some turning point can one avoid part of this problem.

Only after acceptance of this paper for publication did we discover the following corroboratory conclusion, "It follows that Keynes was misled when he argued in the *Treatise* that the general rise in prices had stimulated industrial growth by widening profit margins," in E. H. Phelps Brown and S. V. Hopkins, "Wage-rates and Prices: Evidence for Population Pressure in the Sixteenth Century," *Economica*, Nov. 1957, N.S. 24, 299.

either the observed fall in real wages or the rates of change of prices. Nef was unable to explain differences between the rates of capital formation in France and England with Hamilton's hypothesis.¹⁵ Similarly, the failure to find "correlation between inflation, or its absence, and variations in the rate of economic growth" has led another student of industrial development, Felix, to reject Hamilton's theory of development.¹⁶

C. *The Civil War in the North*

Mitchell's basic time series of wages and prices for the North during the Civil War [34] are substantially better than the data for the early days of the industrial revolution. And there is little doubt that real wages truly fell during the Civil War; most of Mitchell's results cannot be rationalized as an artifact resulting from the choice of the time period said to be inflationary. Moreover, these data [34, p. 343] indicate that a substantial fall in real wages occurred.

One might quarrel with Mitchell's use of a wholesale price index as a deflator of real wages. This index was in large part composed of commodities like opium, mercury, zinc, soda ash, tin plate, blue vitriol, etc. A mere count of such items indicates that an unweighted index overrepresents their effect on the cost-of-living index. Rent, as is typically the case for wholesale price indexes, was absent. But it is easy to make too much of this point. Mitchell also computed a cost-of-living index for this period, and when either this index or one computed by Ethel Hoover, who used the same source material, is used as a deflator, the results still indicate a substantial fall in real wages, although smaller than when wholesale prices are used.¹⁷ (These data are reproduced in [24, p. 102]).

These results led Mitchell to conclude that: "All of the statistical evidence that has been presented in the preceding pages supports unequivocally the common theory that persons whose incomes are derived from wages suffer seriously from a depreciation of the currency" [34, p. 347]. They also led Mitchell to embrace the hypothesis that the labor market in the 1860's and 1870's was imperfect and that this imperfection was of a kind that virtually no serious student of industrial organization asserts exists in any other factor or product market [35, p. 276]. However, there is an alternative explanation of the fall in real wages in the North during the Civil War that is con-

¹⁵ J. Nef has collected evidence that fails to show a relationship between the magnitude of the lag and the rate of industrial development. He also has evidence that Hamilton's data exaggerate the magnitude of the fall in real wages [37].

¹⁶ See also Felix's discussion, "Hamilton's *Tour d'Horizon*" [9, pp. 457-59].

¹⁷ Ethel Hoover's index [22, p. 40, Table 1] is better than Mitchell's CPI because it uses more of the available data and better techniques for accounting for gaps in the data.

sistent with the way economists explain changes in price relationships in markets other than labor and it explains more of the relative price movements that occurred. Indeed, this explanation is consistent with the postulate that the labor market was operating perfectly during the inflation associated with the Civil War. Because it has none of the *ad hoc* character of the explanation employed by Mitchell and Hamilton, it is to be preferred.¹⁸

The outbreak of the Civil War substantially destroyed a triangular trading relationship among the North, the South, and England. The South earned foreign exchange through its exports of cotton, which accounted for roughly two-thirds of all U. S. exports. It, in effect, traded these foreign exchange earnings for Northern goods and services, and the North in turn used this foreign exchange to purchase imports. The outbreak of hostilities, in addition to destroying a mutually profitable trading relationship between the North and the South, presented the North with what would be regarded today as an extremely difficult balance-of-payments problem. This problem was aggravated by a capital flight of foreign investments during the early years of the war.

That this important problem confronting the North has been largely unrecognized is in large part to be explained by the fact that it was solved unobtrusively and successfully by a measure designed for a largely unrelated function. During the war, the North engaged in the printing of greenbacks; and the resulting inflation and the maintenance of convertibility at the prewar exchange rate were incompatible. In consequence, the North abandoned the gold standard in favor of an inconvertible paper standard and a freely fluctuating exchange rate which inadvertently solved the balance-of-payments problem.

The rise in the prices of imports relative to the rise in domestic prices and wages inevitably produced a fall in real factor incomes of all types. In so far as money wages are deflated by a price index that includes international goods, particularly imports, real wages decline. Since Mitchell's wholesale price index was more heavily weighted by imports than his consumer price index, the use of the former as a deflator produces a greater fall in real wages than does the latter. And of course if imports are excluded from his consumer price index and what remains is used as a deflator of money wages, a still smaller fall in real wages is measured.

However, this is only part of the explanation of the fall in real wages that Mitchell observed. The North, in addition to taxing through inflation, also employed turnover taxes and tariffs as means of war finance. The severity of these taxes increased during the course of the

¹⁸ The analysis which follows is more fully developed in a paper which appears elsewhere. See [24].

war. These taxes produced a divergence between the sum of the payments to agents of production and final product prices, because unlike retail sales taxes today, they became a part of final product prices. One would also expect for this reason to find that real wages, as measured by Mitchell, declined during the course of the Civil War.

Both the balance-of-payments problem and the turnover taxes would have produced a fall in real wages whether or not inflation had occurred. If the government's increased expenditures had not been financed by inflationary methods, some other means of taxation would have been required. Had tariffs or turnover taxes in any part replaced the inflation tax, an even greater fall in real wages would have occurred. The inflation tax implies that real wages were higher than they otherwise would have been.

D. The Civil War in the South

In a number of respects, Eugene Lerner's study of the Confederacy [27] [28] is parallel to Mitchell's work. In particular, both found that real wages declined. In neither case can most of the decline be attributed to the special characteristics of the base or terminal years for the time period defined as inflationary. Like Mitchell, Lerner attributes the fall in real wages to the lag of wages behind prices and accepts the extraordinary profitability implication of the wage-lag argument. "Prices rose much faster than wages in the Confederacy, and southern businessmen made large profits" [28, p. 31]. His paper contains virtually no evidence on profits.

The acceptance by Lerner of the wage-lag explanation of the fall in real wages is inconsistent with another interpretation of the events of the time that may be found in his own papers. He indicates that much of Southern capital was highly specialized to the production of cotton for an international market and that the Northern blockade sharply reduced the productivity of this capital. Lerner also reports that excises, either in the form of taxes or payments in kind, constituted an important means of war finance. In fact, Lerner implicitly presents a hypothesis that explains the fall in real wages by nonmonetary phenomena, but he explicitly accepts the thesis that the fall in real wages is attributable to inflation.

E. The First World War

Hansen's study is concerned with real wages and price changes in the United States from 1820 to 1923 and thus includes the inflation associated with the first world war. His position is much like that of Mitchell and Hamilton. "Rising prices cause a gap between the marginal productivity of the various factors employed by the entrepreneur

TABLE 4—HANSEN'S SERIES OF MONEY WAGES, COST OF LIVING AND REAL WAGES*
(1913=100)

Year	Index of Money Wages	Index of Cost-of-Living	Index of Real Wages
1910	94	94	100
1911	95	92	103
1912	98	96	102
1913	100	100	100
1914	102	102	100
1915	104	104	100
1916	118	111	106
1917	134	131	102
1918	168	159	106
1919	193	183	105
1920	232	208	112
1921	207	182	114
1922	201	168	120
1923	220	171	129

* Reproduced from Hansen [21, p. 32].

and the return that each receives. Indeed in such periods it is literally true that 'labor does not receive the full value of its product' " [21, p. 40].

However, even if real forces are assumed to be constant, as Hansen presumably assumed, the data do not support the wage-lag hypothesis. Indeed, they can be just as easily construed as undermining the hypothesis. Only if one chooses the year 1916 as a base and compares it with 1919 or 1917, can one show that real wages fell.¹⁹ (See Table 4.) If one uses 1913 as a base, and every succeeding year through 1920 as a terminal point, there is nothing to indicate a fall in real wages. In fact, Hansen's data show that real wages were almost 10 per cent greater in 1920 than in 1917.

These data of Hansen's contain an unfortunate bias in favor of the wage-lag hypothesis for the entire time interval with which he was concerned. Starting with 1890, Hansen uses weekly earnings rather than hourly earnings. If leisure is a superior good, and if real hourly earnings per capita rise, then weekly earnings understate real wages because of the substitution of leisure for income from work. Consequently, evidence collected to reveal a fall in real wages can be explained, at least in part, by the hypothesis that they were in fact rising. This bias is particularly unfortunate in a study of secular inflations

¹⁹ Hamilton in a parenthetical remark [15, p. 355] selects 1916 as a base year and observes that "... American profiteers reaped [income] from a similar divergence between prices and wages from 1916 to 1919." Hansen's data, reproduced as Table 5, show a less than one per cent fall in real wages for this period.

because the longer the time period considered, the greater the error it introduces into the calculations.

F. *The German Inflation*

Bresciani-Turroni contends that real wages declined as a *result* of the inflation in Germany following the first world war [7].²⁰ For the entire inflationary episode, he concluded: "But it may be said that on the whole the inflation generally favoured the entrepreneurs and the owners of material means of production, especially strengthening the positions of industrial capitalists; that it caused a lowering of the real wages of workmen . . ." [7, p. 286]. However, leaving aside questions of the impact of real forces upon real wages, Bresciani-Turroni's wage data, which consist almost exclusively of miners' wages, show that real wages sometimes declined and sometimes rose during the course of the inflation. Over the period as a whole, real wages did not fall [7, pp. 307, 309].

During the later stages of the inflation when the real value of the nominal stock of money declined sharply, or during the time that velocity increased at a rate more rapid than the rate of increase of the monetary stock, Bresciani-Turroni found that real wages fell. This rise in velocity was attributable to the recognition by the community of the increased cost of holding cash balances caused by rising prices. In this respect the German hyperinflation was unlike the inflations examined by Mitchell, Hansen, Hamilton, Gilboy, and Tucker, and it led to a marked reduction in the effective stock of capital in money form. Under these circumstances, the higher marginal cost of using money is an additional cost of doing business, and this implies that the share of the final output of the economy going to the other cooperating agents of production has decreased. Consequently, a fall in real wages during an inflation that is generally anticipated is consistent with a perfectly functioning labor market and does not imply an increase in business profits. In fact this analysis is consistent with Bresciani-Turroni's data on share prices, which do not support the thesis that business firms are extraordinarily profitable as a consequence of inflation [7, p. 253].

In general, it appears that a highly selective sampling from the population of all inflations has produced two important unambiguous cases of a fall in real wages for individual economies, those of the North and the South during the Civil War. For these cases, the wage-lag hypothesis has to compete with price theory. For the one case that has been studied in great detail, that of the North during the Civil War, price theory offers a more satisfactory explanation.

²⁰ "The increase in nominal wage rates was slower than the increase in prices caused by monetary inflation. In other words, real wages fell" [7, p. 305; also pp. 186-88]. This fall in real wages, according to Bresciani-Turroni, continued until the summer of 1922.

Whether or not available data indicate that real wages fell during inflation for some particular economy does not in itself establish or disprove the existence of an inflation-induced wage lag unless one assumes real forces to be inoperative. A time series of wages and prices can be made relevant evidence for testing the wage-lag hypothesis only after the effects of real forces are controlled. Unfortunately, the wage-lag theorists have generally ignored real forces. In the case of the North during the Civil War, the real forces ignored are substantial in magnitude and capable of producing the effects upon real wages imputed to the wage-lag hypothesis. When one considers the implications of this hypothesis, as the wage-lag theorists have not, the differences between industrial development in the North and South of England during the early days of the industrial revolutions, along with the Nef findings, must be regarded as still more evidence against this hypothesis.

III. *New Evidence*

In an effort to bring some new evidence to bear on the validity of wage-lag hypothesis, the annual wage bills for 56 industrial corporations listed on the New York Stock Exchange during the time interval 1940 to 1952 have been collected. These were all the industrial firms listed that reported their wage bills during this entire period.

The proposition tested was that the firms with large annual wage bills would experience an increase in profits (and wealth) relative to firms with smaller annual wage bills. That is, for any given rise in prices, sales and costs other than wages rise by the same proportion, whereas total wages [W] rise by less, e.g., by only some fraction, α , of the general price rise. Thus, $W(1 - \alpha)$ constitutes the size of the gain in profits for any firm. The relative magnitude of the gain is a function of the size of a firm's wage bill relative to its equity, as measured by its market value. In other words, the ratio of wages to equity is an indicator of the relative rise in stock prices attributable to a lag of wages behind prices.²¹

The ratio of wages to equity was obtained for each of the years from 1940 to 1952 through the use of the annual wage bill and the market value of stock outstanding at the end of the year. Unfortunately, testing for a relationship between the relative change in market value and the wage-to-equity ratio produces a bias in favor of finding a positive correlation because ratios with the same denominator are being corre-

²¹ Hamilton evidently regards the ratio of wages to total costs as the correct indicator of the size of the gain attributable to the lag of wages behind prices [18, p. 262]. However, two firms with identical equity values and identical ratios of wages to total costs might have different mark-ups and consequently different aggregate wage bills. (For example, consider a jewelry store and a supermarket grocery.) What is relevant is the size of the wage bill. And for interfirm comparisons, the relationship of the wage bill to total equity is the appropriate one.

lated. To reduce this bias, the annual wage-to-equity ratios, one for each year in the 1940 to 1952 period, were averaged for each corporation and then used as a predictor of relative changes in equity values.²²

The use of this average seemed reasonable because the differences between firms with respect to this average were significantly greater than the variations of any given year from the average for any firm. (The wage-to-equity ratios exhibited no trend over time.) The standard deviation of the ratio of wages to equity for any given year was about 20 per cent of the average for any firm. On the other hand, the average ratio varied, from firm to firm, from a low of 1 to a high of 7.²³ And because the interfirm variation was so much greater than the intrafirm variation, it seemed sensible to enlarge the size of the sample by using data for firms that reported annual wage bills for as little as two years of the time-span studied. This brought the sample to 113 firms. (A listing of the firms and other relevant data may be obtained through personal communication with the authors. Unfortunately, space constraints do not permit us to publish them here.)

By trying to detect a correlation between wage-to-equity ratios and changes in stock prices, the effects of a lag of wages behind prices caused by inflation can be disentangled from the effects of real forces upon real wages. After all, if one believes that real and monetary forces can operate independently and concurrently, the wage lag should be operative regardless of whether time series of wages and prices during inflation show that real wages fell, rose, or were constant. Given independence between real forces and the wage-to-equity ratio of a firm, this test ought to reveal the presence of the effects of inflation upon real wages.

According to the wage-lag hypothesis, the greater the wage-to-equity ratio, the larger should be the rise in equity values as a result of inflation.²⁴ To test whether or not this implication is in fact correct, firms were ranked according to their average ratio of wages to equity. The percentage increase in equity for firms with an average ratio of annual wages to equity below .5 were compared with those above 1. The results of this comparison are presented in summary form in Table 5. The

²² This also buys some insurance against committing the regression fallacy. If the wage-to-equity ratio at the beginning of the time period were used, firms with large wage-to-equity ratios might be those with transitorily small equity valuations and conversely.

²³ This ratio is affected by the financial structure. A firm with large debts and small equity financing will have a high wage-to-equity ratio and conversely.

²⁴ For example, if a firm's stock sold for \$4 at the end of 1939 and \$40 at the end of 1952, the equity increase is shown as a ratio, 10. Dividends paid are assumed to be reinvested into more shares of the same firm, and thus their growth was compounded. In this way, differences in dividend payout policy were held constant.

average equity rise was greater the lower the wages-to-equity ratio. Such a difference in the wrong direction clearly does not support the wage-lag hypothesis. Dividing the sample into two equal parts, one consisting of firms with the larger wage-to-equity ratios and the other of firms with the smaller wage-to-equity ratios, yields similar results.

In any attempt to impute the absence of causality to the absence of correlation between two variables, there always exists the danger that still another variable is so correlated with what is regarded as the independent variable that the effects of the independent variable upon the dependent variable are concealed. Relevant to this problem is the fact that a relationship is known to exist between the net monetary status

TABLE 5—MEAN EQUITY INCREASES OF FIRMS CLASSIFIED BY WAGE-TO-EQUITY RATIO*

Ratio of Wages-to-Equity	Average Increase in Equity (1939-52)	Number of Firms	Variance
Under .5	8.41	34	48.4
.5 to .99	7.40	30	39.1
1. and over	6.19	49	26.5
"t" for 8.41-6.19 = +1.58			
P($t \geq 1.26$) = .12			

* Sources: Moody's *Industrials* [36], *Annual Reports* [3], and *New York Times* [38].

of a firm and the relative change in its stock prices during inflation [23, p. 128]. The increase in the equity of the 43 firms in the sample that were net monetary debtors at least two-thirds of the time from 1940 to 1952 was greater than that experienced by the 29 firms in the sample that were net monetary creditors at least two-thirds of the time.²⁵ These results are consistent with known effects of debtor-creditor status upon stock-price changes during inflation.²⁶ Consequently, if firms that were large net debtors were also firms that had

²⁵ There were 43 debtor and 29 creditor firms. The mean rise for the debtor firms was 8.25 with a variance of 39.67; for the creditor firms, the mean was 5.94 and the variance 19.20. $\bar{x}_d - \bar{x}_c = 2.31$, $t = 1.82$, $P(t \geq +1.82) \approx .04$ Sources: [3] [36] [38].

²⁶ Possibly this is too strong a statement. Bach and Ando [5] report that they were unable to detect the debtor-creditor effect. There seem to be two reasons for the apparent difference between the outcome of Kessel's early work and the results reported here on the one hand, and the results reported by Bach and Ando on the other. Bach and Ando used several different criteria for determining whether or not the debtor-creditor effect existed. Only one of these criteria was implied by the hypothesis being tested. On that one pertinent criterion their results do verify the debtor-creditor wealth transfer. But they relied on the rule of the majority rather than the rule of a decisive test. This error was compounded by their erroneous use of a "two-tailed" probability calculation instead of a one-tailed calculation. For additional evidence, published subsequent to the Bach and Ando paper, see [2, p. 537].

large wage-to-equity ratios, debtor status would counteract the effect of the wage lag upon stock prices, and the consequences of inflation-induced lags of wages behind prices would go undetected.

In order to determine whether or not debtor-creditor effects were masking the effects of inflation upon business profits, the relationships among (1) changes in equity values, (2) annual wage-to-equity ratios, (3) debtor-creditor status, and (4) annual sales-to-equity ratio (for those who think that sales are correlated with wage-to-equity ratios) were explored by means of a multiple correlation analysis. As a measure of a firm's net monetary creditor or debtor status over the interval 1940 to 1952, the average of debtor-creditor status in each year was

TABLE 6—MATRIX OF SIMPLE AND RANK CORRELATION COEFFICIENTS AMONG EQUITY RISE, WAGE-TO-EQUITY RATIO, NET MONETARY STATUS, AND SALES-TO-EQUITY RATIO*

	(1)	(2)	(3)	(4)
Equity Rise, 1952/1939 (1)	1.	.04 (— .09)	.01 (.24)	.10 (.02)
Ratio of Wages-to-Equity (2)		1.	.33 (.15)	.51 (.83)
Net Monetary Status (3)			1.	.10 (.36)
Ratio of Sales-to-Equity (4)				1.
Partial Correlation Coefficients	$r_{12.34} = -.09 (-.11)$ $r_{13.24} = .04 (.36)$ $r_{14.23} = .16 (.08)$			

* The rank correlation coefficients are in parentheses. For the ranks, the one-tailed 5 per cent probability value is .16, the two-tailed probability value is .22, $P(r > .36) < .001$.

weighted by the price rise for the year as measured by the change in the consumer price index of the Bureau of Labor Statistics.²⁷ For each of 113 firms there are observations with respect to four variables. The simple correlation coefficients among these four variables are presented in Table 6 along with the partial correlation coefficients of each predictive variable with the other two predictive variables held statistically constant. Results of this partial correlation analysis do not support the wage lag.²⁸ However, these correlation coefficients are difficult to interpret because the necessary conditions for computing their sampling distribution are not satisfied. In particular, the predicted or dependent variable is not normally distributed.²⁹ Therefore, no reliable probability tests of significance can be applied.

²⁷ Subsequent examination indicates that an unweighted average, which is cheaper to compute, would have given essentially similar, but not quite as effective, results.

²⁸ Since these are the same data used in the previous test, these results cannot be construed as new independent evidence against the wage-lag hypothesis.

²⁹ One objection to this procedure that does not seem warranted is the objection that correlations among ratios, such as these are, must be invalid because they are subject to biases. But it is the ratios themselves that are interesting in an economic sense. Secondly,

To obtain a probability test, the values associated with each of the variables were converted to ranks, and rank correlation coefficients were computed. These are reported in Table 6. These calculations indicate a positive partial correlation between net monetary status and increases in equity values. And there is only one chance in 1,000 that such a result could be obtained by randomly sampling from a population characterized by an absence of this relationship. The negative partial correlation of wage-to-equity ratios and changes in stock prices still persists; however, this correlation can be easily rationalized as the result of random sampling from a population characterized by an absence of this relationship. Again the wage-lag hypothesis is not supported after the potential masking effects of two variables are specifically eliminated. The absence of a relationship between sales and changes in equity values is probably the result of using the level of sales rather than the rate of change of sales as an independent variable.

If neither a regression phenomenon nor a masking effect from monetary status is operating, can the results obtained be attributed to a correlation among specific industries? Relative price changes have possibly favored industries consisting of low wage-to-equity firms. Eight of the 34 firms in the low wage-to-equity class are oil firms. The removal of these firms from the sample failed to alter significantly the results obtained. The average equity rise, with the oil firms removed, of the low wage-to-equity firms was still greater than for the other class by a 6.76 to 6.19 margin. Needless to say, there exists an indefinitely large number of variables that might be so correlated with wage-to-equity ratios that the effects of the wage lag upon changes in equity values would be concealed. All any investigator can do is to eliminate only the most promising candidates in the light of his knowledge of the economics of the problem.

IV. Conclusions

One of the important advances in economic analysis in the postwar period has been the formal incorporation into theory of the effects of wealth upon consumption expenditures. Previously it seemed reasonable to argue that wages must lag behind prices during inflation if the government acquired resources through inflation. The logic of this argument has been shown to be false.

Another independent line of argument for the proposition that inflation causes real wages to fall is based on sluggishness or flaws in the labor market whereby wage-earners receive less than their marginal

even if one thinks in absolute terms, the weighting of observations by the inverse of their standard deviation eliminates the bias. Moreover, the bias of ratios, if present, would work in favor of the wage-lag hypothesis, not against it.

product when prices are rising. But much of the data which investigators have collected to show a fall in real wages during the course of selected inflations simply fail to support the hypothesis. By one selection of beginning and terminal points for an inflation it can be shown real wages fell; by another selection it can be shown that real wages rose. The fall in real wages reported by these observers is a product of the arbitrary way the time period during which inflation occurred was defined.

However, data do exist, particularly in Mitchell's work, that unambiguously indicate a fall in real wages. But before such data can be seriously considered as supporting the wage-lag hypothesis, one must first show that even after price theory has done all it can to explain the altered price-wage relationship, there is still something left to explain. The advocates or investigators of the wage-lag hypothesis have never shown this. As for the time period studied by Mitchell, it appears that known and measurable real forces can and do explain the fall in real wages that he has observed.

Efforts to detect the existence of the wage lag during inflation through the examination of stock prices of firms that differed with respect to the volume of labor hired per dollar of invested capital by owners have also failed. This evidence contradicts the wage-lag hypothesis. Still, it is easy to make too much of this evidence since it was based on a nonrandom sample and was obtained for only one inflation.

In general, it appears that unwarranted validity has been assigned to the wage-lag hypothesis, given the character of the evidence that has been used to support it. A rereading of this evidence suggests that the wage-lag hypothesis ought to be regarded as essentially untested.

REFERENCES

1. A. ALCHIAN AND R. KESSEL, "How the Government Gains from Inflation," *Proceedings of the Thirtieth Annual Conference of the Western Economics Association* (1955), Salt Lake City 1956, pp. 13-16.
2. ———, "Redistribution of Wealth through Inflation," *Science*, Sept. 4, 1959, 130, 535-39.
3. *Corporation Annual Reports*, Godfrey Memorial Library (New Haven, Yale University), 1939 to 1952.
4. T. S. ASHTON, "The Standard of Life of the Workers in England, 1790-1830," in *Capitalism and the Historians*, ed. F. A. Hayek, Chicago 1954, pp. 127-59.
5. G. L. BACH AND A. ANDO, "The Redistributive Effects of Inflation," *Rev. Econ. and Stat.*, Feb. 1957, 39, 1-13.
6. E. M. BERNSTEIN AND I. G. PATEL, "Inflation in Relation to Economic Development," *Internat. Mon. Fund Staff Papers*, Nov. 1952, 2, 363-98.
7. C. BRESCIANI-TURRONI, *The Economics of Inflation*. London 1937.

8. P. CAGAN, "The Monetary Dynamics of Hyperinflation," in *Studies in the Quantity Theory of Money*, M. Friedman, ed., Chicago 1956, pp. 25-117.
9. D. FELIX, "Profit Inflation and Industrial Growth: The Historic Record and Contemporary Analogies," *Quart. Jour. Econ.*, Aug. 1956, 70, 441-63.
10. I. FISHER, *The Purchasing Power of Money*. Rev. ed. New York 1926.
11. M. FRIEDMAN, "Discussion of the Inflationary Gap," *Essays in Positive Economics*, Chicago 1953, pp. 251-62.
12. E. GILBOY, *Wages in Eighteenth Century England*. Cambridge, Mass. 1934.
13. ———, "The Cost of Living and Real Wages in Eighteenth Century England," *Rev. Econ. Stat.*, 1936, 18, 134-43.
14. G. HABERLER, *Prosperity and Depression*. 3d ed. New York, United Nations, 1946, pp. 137-41, 481.
15. E. J. HAMILTON, "American Treasure and the Rise of Capitalism (1500-1700)," *Economica*, Nov. 1929, 9, 338-57.
16. ———, *American Treasure and the Price Revolution in Spain, 1501-1650*. Cambridge, Mass. 1934.
17. ———, *Money, Prices, and Wages in Valencia, Aragon, and Navarre, 1351-1500*. Cambridge, Mass. 1936.
18. ———, "Profit Inflation and the Industrial Revolution, 1751-1800," *Quart. Jour. Econ.*, Feb. 1942, 56, 256-73; reprinted [26, pp. 322-36].
19. ———, *War and Prices in Spain, 1651-1800*. Cambridge, Mass. 1947.
20. ———, "Prices as a Factor in Business Growth," *Jour. Econ. Hist.*, Fall 1952, 12, 325-49.
21. A. H. HANSEN, "Factors Affecting Trend of Real Wages," *Am. Econ. Rev.*, 1925, 15, 40-53.
22. E. D. HOOVER, *Prices in the United States in the 19th Century*. (Mimeographed and unpublished manuscript presented at a National Bureau Conference on Research in Income and Wealth, Sept. 4-5, 1957.)
23. R. A. KESSEL, "Inflation-Caused Wealth Redistribution: A Test of a Hypothesis," *Am. Econ. Rev.*, Mar. 1956, 46, 128-41.
24. R. A. KESSEL AND A. A. ALCHIAN, "Real Wages in the North during the Civil War: Mitchell's Data Reinterpreted," *Jour. Law and Econ.*, Oct. 1959, 2, 95-113.
25. J. M. KEYNES, *A Treatise on Money*. Vol. 2. New York 1930.
26. F. C. LANE AND J. C. RIEMERSMA, ed., *Enterprise and Secular Change*. Homewood, Ill. 1953.
27. E. M. LERNER, "The Monetary and Fiscal Programs of the Confederate Government, 1861-65," *Jour. Pol. Econ.*, Dec. 1954, 62, 506-22.
28. ———, "Money, Prices, and Wages in the Confederacy, 1861-65," *Jour. Pol. Econ.*, Feb. 1955, 63, 20-40.
29. W. A. LEWIS, *The Theory of Economic Growth*. Homewood, Ill. 1955.
30. E. LIPSON, *The Economic History of England*. Vol. 1, 4th ed. London 1926.
31. A. MARSHALL, "Answers to Questions on the Subject of Currency and Prices Circulated by Royal Commission on the Depression of Trade and

- Industry (1886)," *Official Papers by Alfred Marshall*, London 1926, pp. 3-16.
32. G. M. MEIER AND R. BALDWIN, *Economic Development: Theory, History, Policy*. New York 1957.
33. F. V. MEYER, *Inflation and Capital*. Cambridge, Eng. 1954.
34. W. C. MITCHELL, *A History of the Greenbacks*. Chicago 1903.
35. ———, *Gold Prices, and Wages under the Greenback Standard*, Berkeley 1908.
36. *Moody's Manual of Investments, American and Foreign, Industrial Securities*. Moody's Investor's Service, New York. Annually from 1939 through 1953.
37. J. NEF, "Prices and Industrial Capitalism in France and England, 1540-1640," *Econ. Hist. Rev.*, May 1937, 7, 155-85, reprinted in [26, pp. 292-321].
38. *The New York Times*, daily ed., 1939-1952.
39. A. REES, "Patterns of Wages, Prices and Productivity," in *Wages, Prices, Profits and Productivity*, The Fifteenth American Assembly, New York 1959, pp. 11-59.
40. R. S. TUCKER, "Real Wages of Artisans in London, 1729-1935," *Jour. Am. Stat. Assoc.*, 1936, 31, 73-84.
41. H. P. WILLIS AND J. M. CHAPMAN, *The Economics of Inflation*, New York 1935.

THE PURE THEORY OF INTERNATIONAL TRADE

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The English classical model of foreign trade is the source of many propositions which form the body of international trade theory today. Despite attacks on other branches of classical theory it still survives as a basic tool of analysis. Its survival can be attributed to its applicability to leading policy issues in the country in which it originated, and to the power of its methodology: it was logically immune to the criticisms of general equilibrium and macroeconomic analysis.

The classical economists were content to establish the direction in which the terms of trade move as a result of such disturbances as dishoarding, tariff adjustments, devaluation, income transfers and productivity changes. Nowadays more refined methods make it possible to derive more implications from the model, implicit in their analysis, and to ascertain the quantitative extent of the change in the terms of trade. The purpose of this paper is to derive and summarize these results.

Specifically, I shall construct an international trade model owing its origin to the classical school, and apply it to determine the exact effects on international equilibrium of unilateral transfers, productivity changes, export and import taxes, and production and consumption taxes. Many of the conclusions are already known, but it is believed that the methods employed will help to simplify the techniques used in this branch of international trade theory, and that the results established will provide a convenient survey of the subject. The first part of the analysis will be concerned with the implications of the two-country two-commodity model usually employed by the classical economists. In the final section an attempt is made to determine the validity of the results when there are many countries.

I. *The Free Trade Model*

Assume that there are two countries, A and B, in full employment, producing two commodities— X , which is exported by A, and Y , which is exported by B. Let capital letters denote production, small letters consumption, and subscripts, countries. Let T represent the capital

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exports (lending) of country A expressed in terms of X ; let P denote the terms of trade, the price of Y in terms of X ; and let D represent domestic expenditure.

The system can then be described by the following equations:

$$(1) \quad D_a = x_a + P y_a = X_a + P Y_a - T.$$

Domestic expenditure in A (in terms of X) equals national income minus net capital exports.

$$(2) \quad D_b = x_b/P + y_b = X_b/P + Y_b + T/P.$$

Domestic expenditure in B (in terms of Y) equals national income plus net capital imports.

$$(3) \quad y_a = y_a(D_a, P).$$

The demand for Y in A depends on domestic expenditure and the terms of trade.

$$(4) \quad x_b = x_b(D_b, 1/P).$$

The demand for X in B depends on domestic expenditure and the terms of trade.

$$(5), (6) \quad X_a = X_a(1/P); \quad Y_a = Y_a(P).$$

The production of X and Y in A depends on the terms of trade.

$$(7), (8) \quad X_b = X_b(1/P); \quad Y_b = Y_b(P).$$

The production of X and Y in B depends on the terms of trade.

$$(9) \quad T = x_b - X_b - P(y_a - Y_a).$$

The net capital exports of country A equal the balance of trade of country A.

Variations in domestic expenditure in each country are assumed to depend on changes in policy. In the free-trade case the system is completed by the following equations:

$$D_a = D_a(T); \quad \text{and} \quad D_b = D_b(T/P).$$

We then have eleven independent equations in the twelve unknowns: $x_a, x_b, y_a, y_b, X_a, X_b, Y_a, Y_b, D_a, D_b, P$ and T , so there is one degree of freedom. Knowing the rate at which A is lending to B (i. e., T), we can solve for the equilibrium terms of trade (P); or, assuming that the terms of trade are fixed, we can find the rate of lending which will establish equilibrium.¹

There are other, equivalent ways of expressing the same system.

¹ The system can be represented in one diagram by the Edgeworth-Bowley box diagram if production is fixed, and by the technique introduced by Meade [13] if production is variable.

The diagrams in the text provide an alternative proof of some of the propositions; but if the reader prefers to do so he can follow the argument without reference to the diagrams.

Equations (1) and (2) could be replaced by conditions stating that world production and world consumption of each good must be equal—these alternatives imply each other when combined with equation (9) expressing balance-of-payments equilibrium. Equations (3) and (4), the demand functions for the good which is imported in each country, could be replaced by the demand functions for the good which is exported since all income is spent—the part of domestic expenditure which is not spent on one good must be spent on the other good.

It will be convenient to define an import demand function for each country. The demand for imports is the difference between the quantities of the imported good demanded and supplied, i.e., $I_a = y_a - Y_a$, and $I_b = x_b - X_b$, where I_a and I_b are, respectively, the demands for imports in A and B. Then since the demand and supply functions depend only on domestic expenditure and the terms of trade, the import demand functions must also depend on these variables. Thus we have two more equations and two more unknowns:

$$(10) \quad I_a = I_a(D_a, P) \quad \text{and} \quad (11) \quad I_b = I_b(D_b, 1/P).$$

If we now substitute (10) and (11) in the balance-of-payments equation (9) we obtain

$$(12) \quad T = I_b(D_b, 1/P) - P I_a(D_a, P).$$

The task of the following analysis is to introduce into these equations various policy parameters, and to show how the equilibrium values of the variables are affected by changes in these policies. It is first convenient, however, to outline the procedure by which the effect of these changes may most simply be obtained.

II. Procedure

The purpose of comparative-statics analysis is to compare two positions of equilibrium distinguished from each other by a shift in some parameter. In this paper we call the parameter shift a "policy change." A policy change disturbs the initial equilibrium by causing an excess demand for one of the commodities which must be eliminated by an adjustment in some other variable at the new equilibrium. The adjusting or "equilibrating" variable may be another policy change, a reversal of the original policy change, or a process of adjustment which is sufficiently traditional—hence predictable—to be called "automatic."

In classical theory the adjustment mechanism was automatic. A policy change disturbed balance-of-payments equilibrium, induced a gold flow and, through changes in relative price levels, a change in the terms of trade. Today this mechanism is not so automatic, i.e., central bank and government reaction to disequilibrium in the balance of payments is less predictable. Besides the traditional inflation-deflation

method of the gold standard a disequilibrium may be corrected by borrowing (in the short run), trade controls, tax changes, technological change (in the long run), or exchange rate adjustment. Most of these methods have been used by one country or another since the breakdown of the gold standard system to resolve balance-of-payments crises.

Because of this change in institutional response to disequilibrium any analysis of policy changes must be taxonomic. Questions like: "Do tariffs improve the balance of trade?" cannot be given an unequivocal reply—the answer depends on the other policies followed by the government. A tariff disturbs the initial equilibrium and therefore requires, for a new equilibrium to be reached, a change in some other policy; it may involve changes in any or all of the policies listed above.

But exploring all conceivable policy alternatives would be tedious and unrewarding; limits have to be imposed somewhere. For that reason I shall tentatively assume that the classical mechanism is operative, that the terms of trade "automatically" adjust to correct disequilibrium.² The first part of the comparative-statics analysis will therefore determine the effect of policy changes on the terms of trade. It will be shown later how the results can be manipulated to demonstrate the working of other mechanisms of adjustment.

The simplest way to derive the effect of a policy change on the terms of trade is to differentiate the balance-of-payments equation (12) with respect to the change in policy, and to substitute in the result the conditions necessary to satisfy the other conditions of equilibrium. A more intuitive way of getting the criterion, however, is to employ a device implicit in all comparative-statics analysis. This is to compute the excess demand caused by the policy change on the assumption that the adjusting variable (the terms of trade) is constant; and to equate this excess demand to the excess supply created by the actual change in the terms of trade. If, for example, we wish to find the criterion for the effects of a tax on the terms of trade, we first determine the excess demand caused by the tax at constant terms of trade and translate the coefficient of the tax change into the appropriate income or price elasticity; we then compute the excess supply of the same good created by a change in the terms of trade, translating its coefficient into the relevant elasticities. By equating the excess demand and the excess supply the criterion is established.³

² The terms of trade may be assumed to change by means of exchange rate or price level adjustments. If e is the price of a unit of B's currency in terms of A's currency, and P_a and P_b are the factor cost prices of exports in A and B, the terms of trade are $P = e \cdot P_b / P_a$ in the free trade case. From a position of initial equilibrium an increase in e (devaluation by country A) would ultimately cause an offsetting change in P_b / P_a leaving the terms of trade and the balance of payments unaltered.

³ This procedure, which may be called the "method of comparative statics," can be illus-

One further point must be investigated. The adjustment mechanism implies a type of dynamic behavior and thus a condition of dynamic stability. If the system is unstable it would not tend to approach the new equilibrium given by the comparative-statics analysis, and there would be little point in pursuing the comparative-statics analysis. On the other hand if the system is stable, a useful clue may be obtained from the stability conditions about the sign of the coefficient of the adjusting variable, the terms of trade.⁴ The first step, then, is to examine the conditions of dynamic stability.

trated by two familiar examples drawn from economic theory. In the Marshallian demand-supply system, with mnemonic terminology, we have at equilibrium the condition that supply equals demand:

$$(1) \quad D(p; \alpha) = S(p)$$

where α is a parameter representing the position of the demand schedule. To determine the effect on price of a shift in the demand schedule first determine the excess demand caused by the shift at constant price; this equals

$$(2) \quad \frac{\partial D}{\partial \alpha} d\alpha.$$

The excess supply caused by an increase in price is equal to

$$(3) \quad \left(\frac{\partial S}{\partial p} - \frac{\partial D}{\partial p} \right) dp.$$

At the new equilibrium (2) and (3) must be equal so the criterion is

$$(4) \quad \frac{dp}{d\alpha} = \frac{\frac{\partial D}{\partial \alpha}}{\frac{\partial S}{\partial p} - \frac{\partial D}{\partial p}}$$

which is the criterion we set out to find.

In a simple Keynesian system we have, at equilibrium, equality of saving (S) and investment (I), i.e.,

$$(5) \quad I(\alpha) = S(y)$$

where y is income and α is a parameter representing autonomous investment. To find the effects of a shift in the investment schedule on income, first consider the excess demand for goods at constant income, i.e.,

$$(6) \quad \frac{\partial I}{\partial \alpha} d\alpha$$

and then the excess supply induced by a change in income, i.e.,

$$(7) \quad \frac{\partial S}{\partial y} dy = s' dy$$

where s' is the marginal propensity to save. At the new equilibrium the excess demand caused by the shift in investment and the excess supply created by the change in income must be equal. Equating (6) and (7) and rearranging terms we then get the familiar multiplier:

$$(8) \quad \frac{dy}{d\alpha} = \frac{\frac{\partial I}{\partial \alpha}}{s'}.$$

⁴ By the correspondence principle [22, Ch. 9]. Thus in the first example cited in the pre-

III. Stability Conditions

An equilibrium is stable if a small displacement is followed by a return to equilibrium. I assume that the above system is stable if a displacement of the terms of trade from equilibrium sets in motion forces inducing a return to that equilibrium. Now a disequilibrium in the classical system induces a gold flow and a deterioration of the terms of trade of the deficit country: the system is therefore stable only if a fall in the terms of trade of the deficit country causes an improvement in its balance of payments. To find the stability conditions we need to compute the excess supply caused by a change in the terms of trade. This excess supply will simultaneously establish the coefficient of a change in the terms of trade for use in the comparative-statics analysis.

With no lending, and expenditure in each country constant, the balance of payments (B) of country A in terms of home goods can be written as follows:

$$(13) \quad B = I_b (1/P) - P I_a (P).$$

In equilibrium this must be zero. Now choose commodity units so that P is initially equal to unity; then at equilibrium the volume of B's imports equals the volume of A's imports so that we can write $I_b = I = I_a$ initially. Differentiating (13) we get

$$\frac{dB}{dP} = -\frac{P dI_b}{d(1/P)} - \frac{P dI_a}{d(1/P)} - I_a = I \left(-\frac{P}{I_b} \frac{dI_b}{d(1/P)} - \frac{P}{I_a} \frac{dI_a}{dP} - 1 \right).$$

The first two terms in the bracket are, respectively, the elasticities of demand for imports in A and B; write these terms as η_a and η_b . For stability a fall in A's terms of trade must improve A's balance of payments so that the system is stable or unstable depending on whether:

$$(14) \quad \frac{dB}{dP} = I(\eta_a + \eta_b - 1) \geq 0.$$

In words, the system is stable depending on whether the sum of the elasticities of demand for imports is greater or less than unity.⁵ This is,

ceding footnote, on the dynamic hypothesis that excess demand induces an increase in price, stability requires that:

$$\frac{\partial S}{\partial p} - \frac{\partial D}{\partial p} > 0.$$

Therefore the change in demand has the same sign as the resulting change in price.

In the second example, on the dynamic hypothesis that income rises when there is excess demand for goods, stability requires that:

$$s' > 0$$

so an increase in investment induces an increase in income.

⁵ The dynamic behavior of the system may be approximated by the following differential equation:

$$(1) \quad \frac{dP}{dt} = k[P I_a(P) - I_b(1/P)]$$

of course, the familiar Marshallian condition.⁶ (See Figure 1.)

The stability condition can be expressed in terms of one good only. To see this, recall equation (1) which expresses the equality of income (plus borrowing) and expenditure in country A. With lending zero this equation can be written:

$$X_a - x_a = P(y_a - Y_a) = P I_a.$$

i.e., offers of exports equal the value of imports demanded. Substituting in (13) and making a similar substitution for I_b , we can write the balance of payments (with no lending) as follows:

$$B = (x_b - X_b) - (X_a - x_a).$$

Differentiating and rearranging terms we get:

$$\frac{dB}{dP} = \left(\frac{d(x_a + x_b)}{dP} \frac{p}{(x_a + x_b)} - \frac{d(X_a + X_b)}{dP} \frac{P}{(X_a + X_b)} \right) \frac{X}{P}$$

where X is world production and consumption at equilibrium, and the arguments in the bracket are, respectively, the world elasticity of demand for X and the world elasticity of supply of X :

$$\left(\eta_x = - \frac{d(x_a + x_b)}{d(1/P)} \cdot \frac{(1/P)}{(x_a + x_b)} \right)$$

$$\left(\epsilon_x = \frac{d(X_a + X_b)}{d(1/P)} \cdot \frac{(1/P)}{(X_a + X_b)} \right).$$

which states that the speed of the change in the terms of trade is proportional to the discrepancy between foreign exchange payments and receipts. Expanding (1) in a Taylor series, omitting nonlinear terms, and choosing time units to make $k=1$, we obtain

$$(2) \quad \frac{dP}{dt} = I(1 - \eta_a - \eta_b)(P - P^0)$$

where P^0 is the terms of trade at equilibrium. Equation (2) has a solution

$$(3) \quad P = P^0 + A e^{-I(\eta_a + \eta_b - 1)t}.$$

The equilibrium point is stable only if P eventually approaches P^0 ; this can only be the case if the other term in (3) disappears, i.e., if $\eta_a + \eta_b - 1 > 0$.

⁶ Marshall's dynamic postulates differ from those described in the text and in the preceding footnote. The latter assumes that the budget equations in each country are instantaneously satisfied (each country is always at a point on its offer curve) but that markets are not necessarily cleared. Marshall's postulates are based on adjustments of offers toward the budget equations (offer curves) [11]. This difference corresponds roughly to the distinction made between instantaneous and lagged adjustments analyzed in Arrow and Hurwicz [1]. Marshall's adjustment process, which is rationalized by the varying profitability of export industries, admits the possibility of complex roots and therefore an oscillatory path to equilibrium. See Samuelson [22, pp. 266-68].

This discussion refers to the stability of an *equilibrium* rather than to the stability of a *system*. John Stuart Mill recognized the possibility of multiple equilibria without reference to stability [17, pp. 154-63], but his treatment was faulty. Marshall, in 1879, was aware [11, pp. 24-25] that a point of unstable equilibrium must be flanked by points of stable equilibria, that the number of equilibria must be odd, and that (therefore) if an equilibrium were unique it would be stable.

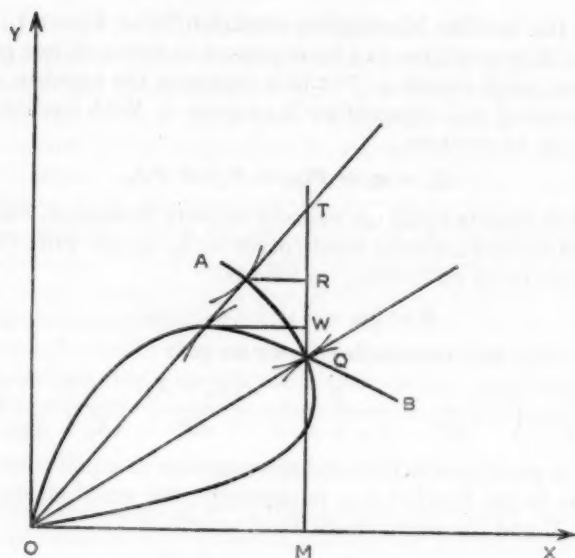


FIGURE 1. STABILITY CONDITIONS

The offer curves OA and OB intersect at initial equilibrium Q . A change in the terms of trade in the proportion TQ/QM in favor of A creates an excess demand for B 's good and a deficit in A 's balance of payments equal to RW (in terms of Y). The situation is therefore stable: Country A loses and country B gains gold, causing deflation in A and inflation in B until the gap RW is closed at the original equilibrium Q .

The stability conditions are derived as follows: Define the elasticities of demand for imports in each country,

$$\eta_a = \frac{RQ}{QM} \bigg/ \frac{TQ}{QM} \quad \text{and} \quad \eta_b = \frac{TW}{QM} \bigg/ \frac{TQ}{QM}$$

and the balance of payments deficit in A in terms of foreign goods,

$$\frac{dB}{P} = RW.$$

Then:

$$\begin{aligned} \frac{dB}{P} &= RW = QM \cdot \frac{TQ}{QM} \cdot \frac{RW}{TQ} = QM \cdot \frac{TQ}{QM} \cdot \frac{RQ + TW - TQ}{TQ} \\ &= QM \cdot \frac{TQ}{QM} \left[\frac{RQ}{QM} \cdot \frac{QM}{TQ} + \frac{TW}{QM} \cdot \frac{QM}{TQ} - 1 \right] \\ &= (\text{by definition}) P \frac{dP}{P} (\eta_a + \eta_b - 1). \end{aligned}$$

Hence:

$$(15) \quad \frac{dB}{dP} = X(\eta_a + \eta_b),$$

where units are chosen so that P is, at equilibrium, equal to unity. By

similar reasoning

$$\left[\text{from the balance of payments equation, } \frac{B}{P} = (Y_b - y_b) - (y_a - Y_a) \right]$$

we find that:

$$(15') \quad \frac{dB}{dP} = Y(\eta_y + \epsilon_y),$$

where η_y and ϵ_y are the elasticities of world demand for, and supply of, Y .⁷

The elasticities of demand for X and Y are defined to be positive provided that these goods are not Giffen goods; and the elasticities of supply of X and Y are defined to be positive provided that opportunity costs are not decreasing. It may then be seen that the system is necessarily stable if neither good is a Giffen good and opportunity costs are not decreasing. But even if the goods are Giffen goods, positive supply elasticities may yet make the system stable.

In the remainder of this paper I assume that the stability condition is satisfied, an assumption which, as the foregoing remarks suggest, does not appear very restrictive.⁸

IV. Unilateral Payments

The first policy change we shall consider is a unilateral payment from one country to the other. This involves two parts: a *financial* transfer and a *real* transfer. The financial transfer refers to the accumulation and liquidation of debt on the part of individuals or governments in each country, while the real transfer refers to the induced movement of goods. Assume that A is the transferring country.

In the case of a private flow of capital (ignoring interest payments) lenders in A buy the debt of borrowers in B , the former financing the purchase out of an excess of saving over investment, the latter disposing of the proceeds by an excess of investment over saving. Because of the identity of income-less-lending and expenditure [equations (1) and (2)] the excess of investment over saving in B , and saving over investment in A , must each equal the transfer.

In the case of intergovernmental transfers such as reparations payments or foreign aid, the government in A (the paying country) grants credits to B , the former financing the credits by means of, say, an in-

⁷ Mosak derived stability conditions in terms of one good only [18, Ch. 4]. See also Johnson [6, p. 98].

When trade is not initially in balance a slight adjustment is required in the stability condition. See Hirschman [5].

⁸ Marshall's judgment is probably too strong: "... it is not inconceivable, but it is absolutely impossible" [12, p. 354].

come tax, the latter disposing of the proceeds by means of, say, an income subsidy. Again, because of the identity of income-less-lending and expenditure, the budget surplus in A and the budget deficit in B are each equal to the transfer.

Whatever the type of transfer and however it is financed and disposed of, domestic expenditure in A is reduced, and in B is increased, by the amount of the transfer. These changes in expenditure induce changes in demand which, at constant terms of trade, create disequilibrium in the balance of payments. The transfer problem may then be posed as the problem of determining the direction and extent of the change in the terms of trade required to eliminate the balance-of-payments disequilibrium.

The Terms of Trade. To find the effects of a transfer on the terms of trade we first determine the excess demand created by the expenditure changes at constant terms of trade. This can be done in terms of either good since an excess demand for one good implies an excess supply of the other good.

The reduction in domestic expenditure in A decreases the demand for Y in A at constant terms of trade by:

$$P \frac{\partial y_a}{\partial D_a} dD_a = m_a dD_a$$

where m_a is the marginal propensity to spend on imports in A. The increase in domestic expenditure in B increases the demand for Y in B by:

$$\frac{\partial y_b}{\partial D_b} dD_b = c_b dD_b$$

where c_b is the marginal propensity to spend on home goods in B. The excess demand at constant terms of trade is therefore the sum of these changes or:

$$m_a dD_a + c_b dD_b = (c_b - m_a) dT,$$

noting that the changes in expenditure in each country are equal to the change in lending, i.e., $-dD_a = dD_b = dT$. Now expenditure in each country is divided between home goods and imports so that the sum of the marginal propensities to spend on home goods and imports is unity; thus $c_b + m_b = 1 = c_a + m_a$.⁹ We can now make use of this result to translate the above criterion into a number of equivalent forms. The

⁹ Differentiation of $D_a = x_a + P y_a$ and $D_b = x_b / P + y_b$ with respect to D_a and D_b yields:

$$1 = \frac{\partial x_a}{\partial D_a} + P \frac{\partial y_a}{\partial D_a} = c_a + m_a, \text{ and}$$

$$1 = \frac{1}{P} \frac{\partial x_b}{\partial D_b} + \frac{\partial y_b}{\partial D_b} = m_a + c_a.$$

most convenient for our purposes is the familiar one:

$$(16) \quad (1 - m_a - m_b)dT,$$

which states that transfer creates an excess demand for, or excess supply of, the good of the transferring country depending on whether the sum of the marginal propensities to spend on imports is greater or less than unity. Only in the special case where the receiving country increases its consumption of the two goods in the same proportion that the paying country does without them ($1 - m_a - m_b = 0$) will no change in the terms of trade be required. If $m_a + m_b > 1$ the receiving country experiences a deficit; if $m_a + m_b < 1$, the paying country suffers a deficit. (See Figure 2.)

To correct the disequilibrium equal to $(1 - m_a - m_b)dT$ a change in the terms of trade is required. But we already know from the stability condition (14) that a change in the terms of trade causes an excess supply of B's good (or an excess demand for A's good, or improves A's balance, or worsens B's balance) by an amount equal to:

$$(17) \quad (\eta_a + \eta_b - 1)IdP.$$

The excess demand for B's good at constant terms of trade must, at the new equilibrium, be equal to the excess supply of B's good caused by the actual change in the terms of trade. Equating of (16) and (17) therefore provides the general criterion for the change in the terms of trade:

$$(18) \quad \frac{dP}{dT} = \frac{1 - m_a - m_b}{I(\eta_a + \eta_b - 1)}.$$

It may be seen that the higher are the price elasticities of demand for imports the smaller will be the change in the terms of trade (a small change relieves a large excess demand). In the limiting case where one of the elasticities is infinite, no change in the terms of trade is required. Similarly, the closer to unity is the sum of the marginal propensities to import, the smaller is the excess demand to be eliminated by a change in the terms of trade, and so the smaller is the actual change in the terms of trade.¹⁰

¹⁰ To obtain the criterion directly, differentiate the balance of payments equation:

$$T = I_b(D_b, 1/P) - P I_a(D_a, P)$$

with respect to T . This yields:

$$1 - m_b \frac{dD_b}{dT} + m_a \frac{dD_a}{dT} = \frac{\partial I_b}{\partial (1/P)} \frac{d(1/P)}{dT} - P \frac{\partial I_a}{\partial P} \frac{dP}{dT} - I_a \frac{dP}{dT}.$$

Expenditure changes are equal in absolute value to the transfer so

$$\frac{dD_b}{dT} = -\frac{dD_a}{dT} = 1.$$

Then by forming elasticities from the terms on the right, and taking P initially equal to unity, we get (18).

For a sample of recent literature on the transfer problem see [18, Ch. 4] [15] [7] [23]; and for a survey of earlier literature see Viner [24, pp. 290-377].

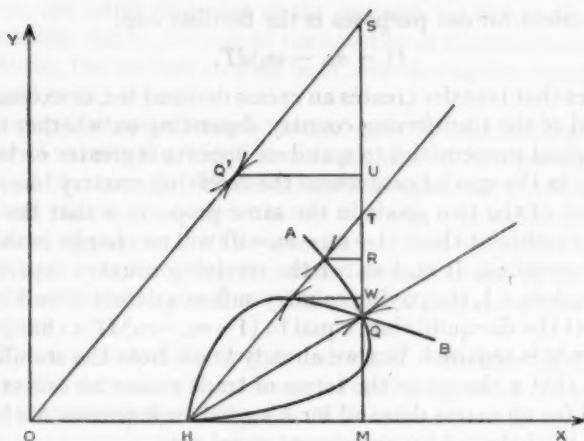


FIGURE 2. THE TRANSFER PROBLEM

The pretransfer offer curves (not drawn) are assumed to intersect initially at Q' . Assume that country A makes a payment equal to OH of X to country B. Then at constant terms of trade expenditure in A is reduced and in B is increased by OH of X or ST of Y . These changes in expenditure induce A to buy UR less of Y and B to buy UW more of Y , creating an excess demand for Y and a deficit in A's balance of payments equal to RW . To eliminate this excess demand a deterioration in A's terms of trade is required until a new equilibrium such as Q is achieved. The new equilibrium Q is determined by the intersection of the new offer curves HA and HB which originate from the new endowment-position H .

The criterion for the change in the terms of trade following transfer may be derived as follows: Define the marginal propensities to import in each country,

$$m_a = \frac{UR}{ST} \text{ and } m_b = 1 - c_b = 1 - \frac{UW}{ST} = \frac{SU - TW}{ST},$$

and the transfer

$$\frac{dT}{P} = \frac{OH}{OH/ST} = ST \text{ in terms of } Y.$$

Then the deficit in the balance of payments of country A due to the transfer at constant prices (in terms of Y) is:

$$\begin{aligned} \frac{dB}{P} &= RW = \left[\frac{UW}{ST} - \frac{UR}{ST} \right] ST = \left[1 - \frac{SU - TW}{ST} - \frac{UR}{ST} \right] \frac{ST}{OH} OH \\ &= (\text{by definition}) (1 - m_a - m_b) \frac{dT}{P}. \end{aligned}$$

On the other hand we also have, from Figure 1,

$$\begin{aligned} \frac{dB}{P} &= QM \cdot \frac{TQ}{QM} \left[\frac{RQ}{QM} \cdot \frac{QM}{TQ} - \frac{TW}{QM} \cdot \frac{QM}{TQ} - 1 \right] = I \frac{dP}{P} (\eta_a + \eta_b - 1). \\ \therefore \frac{dP}{dT} &= \frac{1 - m_a - m_b}{I(\eta_a + \eta_b - 1)}. \end{aligned}$$

Real Income. How is real income affected by a grant or gift from one country to the other? In the reparations discussions of the interwar period the view was widely held that the terms of trade of the paying country must fall, thus imposing an additional burden. The change in real income implicit within the change in the terms of trade was called the "transfer burden."

The change in real income due to transfer is composed of two effects—the direct effect of the change in expenditure, and the income effect implicit within the change in the terms of trade. Thus the real income of the receiving country improves by more or less than the transfer itself depending on whether the terms of trade improve or worsen. For small changes we can approximate the income effect of a change in the terms of trade by the change in cost of the initial volume of imports, i.e., by IdP . The change in real income as a result of transfer is therefore approximately:

$$(19) \quad \frac{dU_b}{dT} = - \frac{dU_a}{dT} = 1 + I \frac{dP}{dT}$$

where U_a and U_b are, respectively, the real incomes of A and B. Now substituting for dP/dT from (16) we obtain an approximate quantitative measure of the change in real income evaluated at pretransfer prices:

$$(20) \quad \frac{dU_b}{dT} = - \frac{dU_a}{dT} = 1 + \frac{1 - m_a - m_b}{(\eta_a + \eta_b - 1)}.$$

It will now be convenient to introduce a relationship between price elasticities and income propensities based on Slutsky's separation of price effects into income and substitution effects. A price elasticity of demand can always be written as the sum of a compensated (pure substitution) price elasticity and an income propensity. We can therefore write the price elasticity of demand for imports as the sum of the compensated elasticity of demand for imports and the marginal propensity to spend on imports. If the primes denote the compensated elasticities we have $\eta_a = \eta'_a + m_a$ and $\eta_b = \eta'_b + m_b$.¹¹ Since pure substitution effects

¹¹ Consider any demand function of the form $I = I(D, P)$ and differentiate with respect to P . This yields:

$$\frac{P}{I} \frac{dI}{dP} = P \frac{\partial I}{\partial D} \frac{dD}{IdP} + \frac{P}{I} \frac{\partial I}{\partial P}$$

after multiplying by P/I . Now $-P/I \partial I / \partial P$ is the (money-income constant) elasticity of demand, η , and $P \partial I / \partial D$ is the marginal propensity to spend, m . Thus:

$$\frac{P}{I} \frac{dI}{dP} = m \frac{dD}{IdP} - \eta.$$

A change in price can be associated with a change in real income approximately equal to the change in cost of the initial amount bought, IdP . If expenditure is adjusted to compensate for

are, in the two-good case, always positive the ordinary elasticity of demand for imports is always larger than the marginal propensity to import by an amount which depends on the size of substitution effects. (See Figure 3.)

Using this relationship we can manipulate (20) to get:

$$(21) \quad \frac{dU_b}{dT} = - \frac{dU_a}{dT} = \frac{\eta_a - m_a + \eta_b - m_b}{\eta_a + \eta_b - 1} = \frac{\eta'_a + \eta'_b}{\eta_a + \eta_b - 1}.$$

From this criterion it can be seen that the real income of the receiving country can only decline, as a result of transfer, if the system is unstable.¹² Assuming stability, the higher are m_a and m_b (the marginal propensities to import) the smaller is the increase in real income of the receiving country, since income effects enter only in the denominator of (21).¹³

V. Productivity Changes

Assume that the country experiencing the productivity increase is completely specialized and that expenditure increases by the full amount of the increase in output. We shall first determine the effects of a change in productivity on the terms of trade, and then its influence on real income.

The Terms of Trade. To determine the effect of a change in productivity on the terms of trade we first determine the excess demand created for one of the goods on the assumption that the terms of trade

this change in real income, i.e., if $dD = IdP$, then $-P/I \, dI/dP$ becomes the compensated elasticity of demand, η' , and we get

$$\eta = + \eta'.$$

If indifference curves are convex all substitution effects are positive, so $\eta' > 0$. From this it follows that the elasticity of demand for imports is always greater than the marginal propensity to import. *A fortiori* the sum of the elasticities of demand for imports is greater than the sum of the marginal propensities to import so that if $m_a + m_b$ is equal to, or exceeds, unity the exchange market is necessarily stable. Alternatively, an unstable exchange market implies that the sum of the marginal propensities to import is less than unity. J. E. Meade has made extensive use [14] of this relation; his stability condition is split into income and substitution effects and, in our notation, is $\eta_a + \eta'_b + m_a + m_b - 1$.

¹² Leontief produced an example [9] consistent with convex indifference curves, where the change in the terms of trade in favor of the paying country is so great that the real income of the latter improves as a result of the transfer. Equation (21) proves that this cannot happen unless the system is unstable. The identification of this "Leontief Effect" with instability is due to Samuelson [22, p. 29].

¹³ Transfer analysis has many applications in economic theory. It applies to any redistribution of income between sectors, individuals or groups within a country. In the Keynesian problem of income redistribution a gift or tax-cum-subsidy from the rich to the poor increases or decreases effective demand depending on whether the marginal propensity to spend (MPS) of the rich is less or greater than that of the poor. In public finance theory an increase in government spending financed by new taxes stimulates effective demand if the MPS of the government is greater than that of the public. And in monetary theory a fall in the price level stimulates effective demand if the MPS of creditors is greater than that of debtors (including governments and central banks).

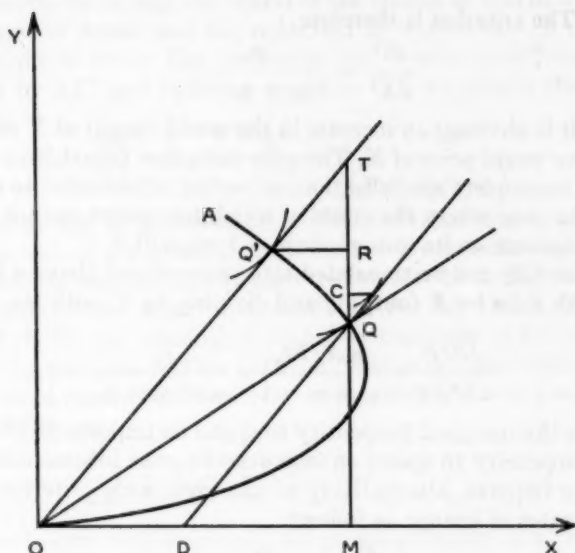


FIGURE 3. INCOME AND PRICE EFFECTS

Initial equilibrium is at Q on A 's offer curve OA . Suppose that the terms of trade change in the proportion TQ/QM , and that at the new terms of trade A trades at the point Q' . The income effect of this change in the terms of trade can be approximated by OD in terms of X or TQ in terms of Y , where OD is drawn parallel to OT .

To prove the relation between compensated and ordinary elasticities: Define the elasticity of demand for imports in A ,

$$\eta_c = \frac{RQ}{QM} \bigg/ \frac{TQ}{QM}, \text{ and the marginal propensity to import in } A, m_a = \frac{RC}{TQ}.$$

Then

$$\eta_c - m_a = \frac{RQ}{TQ} - \frac{RC}{TQ} = \frac{CQ}{TQ}.$$

But

$$\frac{CQ}{TQ} = \frac{CQ}{QM} \bigg/ \frac{TQ}{QM},$$

which is the elasticity of demand for imports with the income effect removed, i.e., the compensated elasticity of demand for imports, η'_a .

are constant. If output in country A increases by dX^* then the change in demand for imports in A is

$$P \frac{\partial I_a}{\partial D_a} \frac{dD_a}{dX^*} dX^* = m_a dX^*$$

since expenditure (equals money income) increases by the full amount of the increase in output. Since at constant terms of trade no change occurs in country B , this is also equal to the *excess* demand for imports in A . This excess demand must be eliminated by a change in the terms

of trade. The criterion is therefore:

$$(22) \quad \frac{dP}{dX^*} = \frac{m_a}{I(\eta_a + \eta_b - 1)}.$$

This result is obvious: an increase in the world output of X must lower the relative world price of X . The only exception (apart from constant costs and incomplete specialization, or perfect substitution in consumption) is the case where the country which has grown spends all of its increased income on its own good ($m_a = 1 - c_a = 0$).¹⁴

Equation (22) can be translated into proportional changes by multiplying both sides by X (output) and dividing by P , with the following result:

$$(23) \quad \frac{dP/P}{dX^*/X} = \frac{m_a X / P I_a}{\eta_a + \eta_b - 1} = \frac{\sigma_a}{\eta_a + \eta_b - 1},$$

where σ_a is the marginal propensity to spend on imports divided by the average propensity to spend on imports—i.e., the income elasticity of demand for imports. Alternatively we can express the criterion in terms of annual rates of change as follows:

$$(24) \quad \frac{\dot{P}}{\dot{R}} = \frac{\sigma_a}{\eta_a + \eta_b - 1}$$

where \dot{P} is the percentage deterioration of A's terms of trade per year and \dot{R} is the annual rate of growth.

By following a similar procedure for country B we can find the annual percentage change in the terms of trade when both countries are growing:

$$(25) \quad \dot{P} = \frac{\sigma_b \dot{R}_b - \sigma_a \dot{R}_a}{\eta_a + \eta_b - 1}$$

where σ_b and \dot{R}_b are, respectively, the income elasticity of demand for imports in B and the annual rate of growth of B.

Real Income. A more interesting question is whether or not real income will increase or decrease as a result of a change in productivity. An increase in productivity affects real income in two ways which work in opposite directions. On the one hand real income increases by the full amount of the change in output at constant terms of trade; but, against this may be set the negative income effect of the actual deterioration in the terms of trade. We may very simply derive a measure of the change

¹⁴ To derive this criterion directly, differentiate $T = I_b(D_b, 1/P) - P I_a(D_a, P)$ with respect to X^* (output in A). With lending (T) constant and zero, this yields

$$\left(-\frac{\partial I_b}{\partial (1/P)} - \frac{\partial I_a}{\partial P} - 1 \right) \frac{dP}{dX^*} = m_b \frac{dD_b}{dX_a^*} - m_a \frac{dD_a}{dX_a^*}.$$

Expenditure in B is constant (in terms of B's good) so $dD_b/dX_a^* = 0$; but expenditure in A increases *pari passu* with output, i.e., $dD_a/dX^* = 1$. Then, forming elasticities from the terms of the left, we get equation (22) above.

in real income by adding the effects of the change in real income at constant terms of trade, and the reduction in income due to the change in the terms of trade. The change in real income is $dU_a^* = dX_a - IdP$. Dividing by dX_a^* and applying equation (22) we obtain the following criterion:

$$(26) \quad \frac{dU_a}{dX_a^*} = 1 - I \frac{dP}{dX_a^*} = 1 - \frac{m_a}{\eta_a + \eta_b - 1}.$$

Real income will be increased by growth provided that $\eta_a + \eta_b > 1 + m_a$, i.e., if the sum of the elasticities of demand for imports is greater than unity plus the marginal propensity to import. Note that violation of this condition is consistent with stability. (See Figure 4.)

It will clarify the meaning of (26) if we make use of the relationship used in the previous section between "ordinary" and "compensated" elasticities of demand for imports—in particular, $\eta_a = \eta'_a + m_a$. Manipulating (26) we get

$$(27) \quad \frac{dU_a}{dX_a} = \frac{\eta_a - m_a + \eta_b - 1}{\eta_a + \eta_b - 1} = \frac{\eta'_a + \eta_b - 1}{\eta_a + \eta_b - 1}.$$

Thus real income will increase in the growing country if $\eta'_a > 1 - \eta_b$, i.e., if the compensated elasticity of demand for imports in the growing country is greater than unity minus the ordinary elasticity of demand for imports in the other country. This criterion may be simplified somewhat by substituting in it the well-known relation between the elasticity of demand for imports and the elasticity of supply of exports (ϵ): $\eta_b - 1 = \epsilon_b$. The criterion is therefore $\eta'_a + \epsilon_b \geq 0$.¹⁵

¹⁵ This relationship can be derived from the income = expenditure condition. From equation (2), with no lending, we have:

$$x_b/P + y_b = X_b/P + Y_b$$

$$\text{or} \quad Y_b - y_b = \frac{1}{P} (x_b - X_b)$$

$$\text{or} \quad E_b = \frac{1}{P} I_b$$

where E_b represents B's offers of exports. Differentiating, and taking P as initially unity, we have:

$$\frac{P}{E_b} \frac{dE_b}{dP} = \frac{P}{I_b} \frac{dI_b}{dP} - 1,$$

after dividing by $E_b = I_b/P$.

Thus $\epsilon_b = \eta_b - 1$, recalling that

$$\frac{P}{I_b} \frac{dI_b}{dP} = - \frac{1/P}{I_b} \frac{dI_b}{d(1/P)} = \eta_b.$$

Note that when the elasticity of demand is unity the elasticity of supply of exports is zero; this means that the same amount of exports is spent on imports regardless of the terms of trade.

A geometric proof of this relation can easily be got from Figure 3 or from Marshall's analysis [11, pp. 337-38].

An alternative, direct method of getting this criterion is to apply the "method of comparative statics." To find whether real income in the growing country increases or decreases first determine the excess demand for imports on the tentative supposition that real income in A is constant. If real income is constant the terms of trade move against A so there is a pure substitution effect, $-\eta'_a IdP$, which measures the increase in demand for imports in A. On the other hand the increase in supply of imports forthcoming from B due to the change in the terms of trade is $\epsilon_b IdP$. The excess demand at constant real income is therefore $-(\eta'_a + \epsilon_b) IdP$. The deterioration in A's terms of trade which leaves A's real income unchanged is therefore too great or too little to relieve the excess demand due to the productivity change depending on whether $\eta'_a + \epsilon_b \geq 0$. The criterion for the change in real income is thus established since, depending on whether the terms-of-trade change has been too great or too little, real income increases or decreases.

It appears then that a country may be worse off with, than without, the improvement in productivity. Growth may be "damnifying."¹⁶ Too rapid growth of the export industries of one country, and the resultant attempt to push exports onto world markets, results in such a large decline in the terms of trade that the negative income effect of the change in relative prices is greater than the positive income effect of the increase in domestic output at constant prices. The case of the group of primary-producing countries readily presents itself. And, if the model were applied to different sectors within a single economy, it might be found that U.S. agriculture is another example.

Nevertheless, this possibility does not present a valid argument against growth. In the first place the conditions under which increasing productivity can affect real income perversely are quite strict: the foreign elasticity of demand must be less than unity and, perhaps, appreciably so if home substitution effects are high. Second (and more important), since world income as a whole increases, by compensation both countries (or sectors) could be made better off than before. Finally, the damnified country can always impose taxes on trade sufficient to reap at least some of the benefits of the productivity increase. Obviously the perverse effect is not possible if the growing country is following an optimum tariff policy since that implies an elasticity of demand in the foreign country greater than unity.

¹⁶ Mill was aware [17, pp. 150-53] that an increase in productivity would lower the commodity terms of trade and even the factorial terms of trade if foreign demand, in the latter case, were inelastic. Edgeworth interpreted [3, p. 10] Mill's passage as indicating that a country could be "damnified" by growth, supplying the necessary assumption to make Mill's analysis correct. The first derivations of criteria (23) and (26) are due to Meade [14, e.g., p. 153] and to Johnson [6] [8].

VI. *Taxes and Subsidies on Trade*

A tax or subsidy on trade introduces a divergence between foreign and domestic price ratios. Equal taxes on exports or imports create the same divergence between foreign and domestic price ratios (if trade is balanced) so that the *real* effects of import and export taxes are symmetrical. A tax on imports at constant terms of trade raises the relative price of imports in the taxing country and therefore *draws* resources away from export industries into import-competing industries. A tax on exports at constant terms of trade lowers the relative price of exports in the taxing country and thus *pushes* resources into import-competing industries. With balanced trade the revenues collected by the two taxes are the same. We may therefore speak of trade restriction or trade promotion without specifying whether the tax or subsidy is on exports or imports.¹⁷

There are two analytic methods of disposing of the tariff proceeds. We may assume that the government spends the tariff proceeds on the two goods in a given proportion; or we may suppose that tax proceeds are redistributed as income subsidies to consumers. The latter method, which is used here, is simpler because it avoids the necessity of introducing a government demand equation, and does not give rise to asymmetries when dealing with trade subsidies. In the following analysis it should be remembered that we are in fact examining the effects of tariffs combined with this method of disposing of the proceeds.

The Terms of Trade. To determine the effect of a tariff on the terms of trade first compute the excess demand for imports at constant terms of trade. At constant terms of trade the relative price of imports in the tariff-imposing country (A) rises by the full amount of the tariff. Then, with t_a representing unity plus the ad valorem rate of tariff, the change in demand for imports before redistribution of the proceeds is:

$$\frac{\partial I_a}{\partial(P t_a)} \frac{d(P t_a)}{dt_a} dt_a = \frac{\partial I_a}{\partial(P t_a)} \frac{P t_a}{I_a} I_a dt_a = -\eta_a I_a dt_a$$

assuming initial free trade ($t_a=1$). To this change in demand must be added the increase in demand for imports occasioned by the redistribution of the tariff proceeds, i.e., $m_a I_a dt_a$. Adding the terms we get the

¹⁷ Marshall writes [12, pp. 180-81]: "... The considerations which can be urged for and against the levying of an import tax on a particular commodity differ widely from those appropriate to a particular export tax: and this is perhaps the origin of an opinion, which seems to pervade a good deal of economic discussion, that a general tax on all imports would have widely different effects from a general tax on all exports. In fact the two taxes would have the same effect: provided they were evenly distributed, equal in aggregate amount, and their proceeds were expended in the same way." He then shows how this can be proved. Bastable, Edgeworth and others were also aware of the symmetry. For a modern treatment see Lerner [10].

excess demand for imports due to the tariff at constant terms of trade, i.e., $(-\eta_a + m_a)Idt_a = -\eta'_a Idt_a$. This excess demand must be eliminated, at the new equilibrium, by a change in the terms of trade. We then have the following criterion:

$$(28) \quad \frac{dP}{dt_a} = \frac{-\eta'_a}{\eta_a + \eta_b - 1}.$$

Tariffs normally improve the terms of trade.¹⁸

The degree to which the terms of trade change following a tariff depends on the elasticities. The more elastic is the foreign offer curve the smaller will be the improvement in the terms of trade due to a tariff, and in the limiting case where the foreign offer curve is perfectly elastic, the terms of trade remain unchanged (the only exception). On the other hand if the foreign offer curve is elastic¹⁹ the greater is the compensated elasticity of demand for imports at home the more effective will a given tariff be in improving the terms of trade; in the limiting case where η'_a is infinite the terms of trade will improve in the same proportion as the (ad valorem) tariff. Now both the above propositions are related to the classical notion about the division of the gains from trade between large and small countries. Because small countries tend to be more completely specialized than large countries, it was generally believed that the offer curve of a small country was less elastic than that of a large country. This means that the gain per unit of trade going to a small country was likely to be larger than that going to a large country. Then since the small country already reaped a large proportion of the gain from trade, opportunities for increasing that gain further through tariffs were small. On the other hand large countries, gaining little from trade, could exact a larger gain by imposing tariffs and forcing small countries to trade at a less favorable price ratio.

The Domestic Price Ratio. A common motive for trade restriction is the protection of import-competing industries. In order that these industries be protected the domestic relative price of imports (inclusive of

¹⁸ To derive (28) directly differentiate:

$$T = 0 = I_a(D_b, 1/P) - P I_a(D_a, P I_a)$$

with respect to t_a . With D_b constant this yields:

$$\begin{aligned} (\eta_a + \eta_b - 1)I \frac{dP}{dt_a} &= P \frac{\partial I_a}{\partial D_a} \frac{dD_a}{dt_a} - \frac{\partial I_a}{\partial (P I_a)} \\ &= (m_a - \eta_a)I \end{aligned}$$

since $dD_a/dt_a = I$; i.e., expenditure in A rises by the value of the tariff proceeds.

The qualitative direction of change in the terms of trade was admitted by Ricardo and known to most of the later classical economists. The algebraic criterion can be got from Meade's analysis [14].

¹⁹ Note that if the foreign offer curve is inelastic the terms of trade may improve by more than the tariff, provided that the home offer curve is not perfectly elastic; if the latter is perfectly elastic the maximum change in the terms of trade is equal to the rate of the tariff.

the tariff) must rise. We shall therefore develop a criterion for the change in the domestic price ratio following a tariff.

The domestic price ratio in country A is Pt_a (where t_a is unity plus the ad valorem rate of tariff). We are interested in how Pt_a will change as a result of an increase in t_a , i.e., in the sign of

$$\frac{d(Pt_a)}{dt_a} = P + t_a \frac{dP}{dt_a},$$

where P and t_a are initially equal to unity. Substituting for dP/dt_a , from equation (26) we obtain the following criterion:

$$(29) \quad \frac{d(Pt_a)}{dt_a} = 1 - \frac{\eta'_a}{\eta_a + \eta_b - 1} = \frac{\eta_b + m_a - 1}{\eta_a + \eta_b - 1}.$$

A tariff raises the domestic price of imports if the sum of the foreign elasticity of demand for imports and the domestic marginal propensity to import is greater than unity.³⁰ The only exception is the case previously mentioned where the home offer curve is infinitely elastic, in which case the domestic price ratio remains unchanged. (See Figure 5.)

The meaning of the criterion will be clarified if we consider the excess demand for imports on the assumption that the domestic price ratio remains unchanged. In that event the terms of trade improve by the full amount of the tariff, so that the change in supply of imports from B is $-e_b Idt_a = (1 - \eta_b) Idt_a$. On the other hand the redistribution of the tariff proceeds and the resulting increase in domestic expenditure in A increases the demand for imports by $m_a Idt_a$. Subtracting the change in supply of imports from B from the increase in demand for imports in A we get the excess demand for imports at constant domestic prices, i.e., $(\eta_b + m_a - 1) Idt_a$. Now if the foreign demand is less than unit-elastic (foreign supply elasticity is negative) an improvement in A's terms of trade results in an increase in supply of imports from B; but against this must be set the increased demand for imports in A resulting from the spending of the tariff proceeds. If the former effect is greater than the latter, the relative price of imports must fall. If, for example, the foreign elasticity of supply were $-.6$ (implying an elasticity of demand equal to $.4$) while the domestic marginal propensity to import were $.5$, the tariff would cause, at constant domestic prices, an excess supply of B's good equal to $.1 Idt_a$; to eliminate this excess supply of B's good, the relative (tariff-inclusive) price of imports must fall, and the terms of trade must improve by more than the tariff.

³⁰ The classical economists, many of whom tried to determine whether a country gained more or less than the amount of the tax, generally employed the criterion $\eta_b \geq 1$, assuming, implicitly or explicitly, that the tax proceeds were spent on domestic goods, or that the tax was on the transit of goods that would be re-exported. For modern discussions see Lerner [10] and Metzler [16].

This possibility is consistent with stability. It means that a tariff may have an adverse protective effect. To protect the domestic industry imports must be subsidized instead of taxed! Under no circumstances, however, would a country ever find it beneficial in fact to subsidize imports to protect the domestic industry. For the adverse protective effect to occur the foreign demand must be inelastic, and in that case a tariff must always result in an improvement in national welfare (more imports are obtained for fewer exports). If an optimum tariff policy is being followed a further increase in the tariff always raises the relative price of imports in the tariff-imposing country and thus has a normal protective effect.

Tariff Changes in Both Countries. If both countries adjust their tariff rates the extent and direction of the disequilibrium depends on the size of the tariff changes and the elasticities of demand. In bilateral tariff negotiations it may be useful to know what adjustment in the tariffs of both countries will leave the balance of payments unaltered. If, for practical reasons, changes in the terms of trade (through exchange rate or wage changes) must be ruled out, countries embarking on, say, a customs union experiment may need to know the rate at which each can reduce tariffs so as to leave the balance of payments unchanged. The answer to this question can readily be obtained from equation (28) making appropriate adjustments for country B. If we write P as the annual deterioration of country A's terms of trade, l_a as the annual change in A's tariff and l_b as the annual change in B's tariff we can obtain the following criterion:

$$(30) \quad P = \frac{\eta'_b l_b - \eta'_a l_a}{\eta_a + \eta_b - 1}.$$

In order to prevent any change in the terms of trade the numerator must be zero; tariffs must then be changed at a rate inversely proportional to the compensated elasticities of demand for imports. [Note that equation (28) applies with a changed sign to subsidies since subsidies are simply negative tariffs.]

Income Transfers and Trade Taxes. Suppose the authorities in one country wish to make a grant to another country but, for political or other reasons, are unable to make the gift official. Alternatively, suppose that one country wishes to exact a transfer of real income from another country without imposing a formal tribute. Can this be accomplished efficiently by changes in trade taxes? (See Figure 6.)

To show that it can consider first the relation between trade taxes and subsidies. Suppose that country A subsidizes exports (or imports) while country B taxes imports (or exports). In that case the same goods are being taxed, the only difference being that the customs duties are

Now if $-dt_a = dt_b = dt$ we have:

$$(31) \quad \frac{-dU_a}{Idt} = \frac{-dU_b}{Idt} = \frac{\eta'_a + \eta'_b}{\eta_a + \eta_b - 1}.$$

But (31) is the same as the criterion for the change in real income after transfer [equation (19) above] if Idt , the value of the tax-subsidy receipts, is substituted for the transfer.

VII. Consumption and Production Taxes

Taxes on commodities, as distinct from taxes on trade, make it necessary to distinguish between consumers' and producers' price ratios. A consumption tax or subsidy creates a divergence between the price ratio facing consumers in the taxing country and all other price ratios, while a production tax causes a discrepancy between the price ratio facing producers and all other price ratios.

There are eight taxes and subsidies in each country which are possible, but it will not be necessary to consider more than two. A subsidy is a negative tax so that we need only consider taxes. And a tax on one good is equivalent to a subsidy on the other good because of our assumptions about the disposal of tax proceeds and the financing of subsidy payments. Because of these assumptions an equal tax on the two goods has no effect on equilibrium; this follows because each tax is combined with an income subsidy, and an income subsidy has the same effect as an equal subsidy (or an equal reduction in taxes) on the two goods. But if an equal tax on the two goods does not affect equilibrium, then neither does a tax on one of the goods combined with the elimination of a subsidy of equal amount on the other good—hence it follows that a tax on one of the goods is equivalent to a subsidy on the other. Thus we need only consider one consumption tax and one production tax.

Consumption Taxes and the Terms of Trade. To find the effects of a consumption tax on the terms of trade first determine the excess demand caused by the tax at constant terms of trade. Let us suppose that a tax is imposed by country A on the imported good, Y . Then at constant terms of trade the price of Y to consumers in A rises by the amount of the tax. Before the redistribution of the tax proceeds the change in demand for y in A, at constant terms of trade, is

$$\frac{\partial y_a}{\partial (Pt_{cya})} \frac{Pt_{cya}}{y_a} y_a dt_{cya} = -\eta_{ya} y_a dt_{cya}$$

where t_{cya} is unity plus the rate at which commodity Y is taxed in A

and η_{ya} is the elasticity of demand for y in A.²¹ (P and t_{cya} are both initially taken to be unity.) Now the tax proceeds amount to $y_a dt_{cya}$ so that the increase in demand for y due to their disposition is $m_a y_a dt_{cya}$. Adding the two effects we get the excess demand at constant terms of trade,

$$(m_a - \eta_{ya}) y_a dt_{cya} = - \eta'_{ya} y_a dt_{cya},$$

where η'_{ya} is the compensated elasticity of demand for y in A, i.e., the elasticity of demand for Y after consumers have been compensated for the change in real income implicit within the price change. We now have the following criterion:

$$(32) \quad \frac{dP}{dt_{cya}} = - \frac{y_a}{I} \frac{\eta'_{ya}}{\eta_a + \eta_b - 1}.$$

The compensated elasticity term is positive (it represents the elasticity of a consumption indifference curve) so that a consumption tax on the imported good generally improves the terms of trade of the taxing country. This conclusion is to be expected since a tax on the imported good diverts demand away from that good, thereby causing an excess world supply.

There are some special cases we may consider: (1) in the unusual case where η'_{ya} is zero—implying no substitution in consumption (a kinked consumption indifference curve at that point)—the terms of trade do not change; (2) if the foreign offer curve is perfectly elastic any excess demand can be eliminated by shifts in production or consumption at constant cost in the foreign country so there results no change in the terms of trade; (3) if the domestic offer curve is perfectly elastic (η_a is infinite) it is now necessary to know whether this is due to perfect substitution in production (incomplete specialization at constant cost) or perfect substitution in consumption; if the former is the case the denominator of (32) is infinite, so the terms of trade do not change; but if

²¹ The elasticity of demand for the imported good is never larger than the elasticity of demand for imports. The exact relation can be derived from the definition of the demand for imports. From $I_a = y_a - Y_a$ we get, by differentiation,

$$\frac{\partial I_a}{\partial P} = \frac{\partial y_a}{\partial P} - \frac{\partial Y_a}{\partial P}$$

and

$$- \frac{P}{I_a} \frac{\partial I_a}{\partial P} = - \frac{\partial y_a}{\partial P} \frac{P}{y_a} \frac{y_a}{I_a} + \frac{\partial Y_a}{\partial P} \frac{P}{Y_a} \frac{Y_a}{I_a}$$

whence

$$\eta_a = \eta_{ya} \frac{y_a}{I} + \epsilon_{ya} \frac{Y_a}{I}$$

where ϵ_{ya} is the elasticity of supply of Y in A. (A similar result, holds for country B.) The elasticities η_{ya} and η_a coincide only when there is no home production of the imported good.

the goods are perfect substitutes in consumption both the denominator and the numerator are infinite so that the terms of trade change by the full amount of the tax; (4) if there is no domestic production of the imported good the tax has the same effect as a tariff ($y_a = I$ and $\eta'_{ya} = \eta'_a$).

This analysis applies also to a subsidy on the consumption of the good which is exported and, with a change of sign, to a subsidy on the imported good or tax on the exported good.

Consumption Taxes and the Ratio of Market Prices. Does a consumption tax necessarily raise the market price of the taxed good relative to that of the untaxed good? By analogy to the effect of a tariff on the domestic price ratio we should not expect this to be so. The market (relative) price of importables is $P_{t_{cya}}$, which we assume to be initially unity. The change in this price ratio due to the tariff is:

$$(33) \quad \frac{d(P_{t_{cya}})}{dt_{cya}} = 1 - \frac{dP}{dt_{cya}} = 1 - \frac{y_a}{I} \frac{\eta'_{ya}}{\eta_a + \eta_b - 1} \\ = \frac{\eta_b + m_a + \epsilon'_{ya} \frac{Y_a}{I} - 1}{\eta_a + \eta_b - 1}$$

where ϵ'_{ya} is the compensated elasticity of supply of Y in A , and represents the elasticity of the production transformation curves.²² Only by

²² The compensated elasticity of supply requires some explanation. From the two relations:

$$\eta_a = \eta'_a + m_a, \quad \text{and} \quad \eta_a = \eta_{ya} \frac{y_a}{I} + \epsilon_{ya} \frac{Y_a}{I}$$

we can obtain:

$$\eta_a = \eta_a - m_a = (\eta_{ya} - m_a) \frac{y_a}{I} + (\epsilon_{ya} + m_a) \frac{Y_a}{I}.$$

It can now be shown that $\eta_{ya} - m_a = \eta'_{ya}$, the compensated elasticity of demand for Y in A ; and that $\epsilon_{ya} + m_a = \epsilon'_{ya}$, the compensated elasticity of supply of Y in A . We have $dI_a = dy_a - dY_a$ from the definition of the demand for imports. Now dI_a contains an income effect equal to $-m_a I_a dP$ where $-I_a dP$ measures the change in real income of country A looked at as a whole. The term dy_a contains an income effect equal to $-m_a y_a dP$, where $-y_a dP$ measures the change in real income of people of country A looked at in their role as consumers alone. Finally the term dY_a contains an income effect equal to $m_a Y_a dP$ where $Y_a dP$ measures the change in real income of producers of Y in country A . We now have the following relations:

$$dI_a = (dI_a)' - m_a I_a dP; \quad dy_a = (dy_a)' - m_a y_a dP; \quad \text{and} \quad dY_a = (dY_a)' + m_a Y_a dP$$

where the primes denote pure substitution effects. Substituting in $dI_a = dy_a - dY_a$ we get

$$(dI_a)' - m_a I_a dP = (dy_a)' - m_a y_a dP - [(dY_a)' + m_a Y_a dP].$$

The income effects on the two sides cancel and the proof of the relation between compensated elasticities follows readily. Dividing by $I_a dP$, multiplying by P , and changing signs we obtain

$$\eta'_a = \eta'_{ya} \frac{y_a}{I} + \epsilon'_{ya} \frac{Y_a}{I}$$

where the primes denote that the elasticities contain no income effects.

this term does the last criterion in (33) differ from the criterion for a change in the domestic price ratio after the imposition of a tariff [see equation (29)]. If a tariff will raise the domestic relative price of imports so will a consumption tax on the import good. The converse is not true. Even if the foreign offer curve is inelastic and the domestic marginal propensity to import is low, high substitution effects in production will be sufficient to ensure a rise in the tax-inclusive price of importables.

Production Taxes and the Terms of Trade. To find the effects of a production tax on the terms of trade first consider the excess demand caused by the production tax at constant terms of trade. If a tax on the production of the import good is imposed and the proceeds of the tax are redistributed to producers there remains only a pure substitution effect, a movement along the production-possibility curve. At constant terms of trade (which is also the price ratio facing domestic consumers) the excess demand for imports, after the redistribution of the proceeds, is equal to:

$$\epsilon'_{ya} Y_a dt_{pya}$$

where t_{pya} is equal to unity plus the tax, and ϵ'_{ya} is the elasticity of the transformation curve. This excess demand must be eliminated by a worsening of A's terms of trade. The criterion is therefore:

$$(34) \quad \frac{dP}{dt_{pya}} = \frac{Y_a}{I} \frac{\epsilon'_{ya}}{(\eta_a + \eta_b - 1)}.$$

Since with increasing opportunity costs ϵ'_{ya} is always positive the terms of trade of the taxing country fall. Again this applies to a production subsidy on the exported good and, with a change of sign, to a production subsidy on the imported good and a production tax on the exported good. This conforms to common sense. A tax on the production of any good decreases the production of that good and increases the production of the other good causing a rise in the relative world price of the taxed good.

Production Taxes and Relative Prices at Factor Cost. The price ratio

These elasticities have a simple interpretation: η'_a is the elasticity of a trade-indifference curve; η'_{ya} is the elasticity of a consumption-indifference curve; and ϵ'_{ya} is the elasticity of a production-indifference (production-possibility) curve. The identification is formally valid for small changes only.

Criterion (32) can be derived directly by differentiating:

$$T = 0 = I_b(D_b, 1/P) - P[y_a(D_a, Pt_{cya}) - Y_a(P)]$$

noting that D_b is constant and that

$$\frac{dD_a}{dt_{cya}} = y_a.$$

facing producers is P/t_{pya} , which is initially taken to be unity. This will change as a result of a tax depending on the sign of:

$$(35) \quad \frac{d(P/t_{pya})}{dt_{pya}} = \frac{dP}{dt_{pya}} - 1 = \frac{Y_a}{I} \frac{\epsilon'_{pya}}{\eta_a + \eta_b - 1} \\ = - \frac{\eta_b + m_a + \eta'_{pya} \frac{Y_a}{I} - 1}{\eta_a + \eta_b - 1}.$$

The analogy to equations (29) and (33) above readily presents itself.²²

Relation between Commodity Taxes and Trade Taxes. A tariff, at constant terms of trade, raises the price of imports to both consumers and producers in the taxing country by the full amount of the tariff. Any other system of taxes which does the same thing will have the same effect on the terms of trade as a tariff. Thus taxes on trade can be duplicated by taxes on commodities. We can establish these relations either by showing that the tax combination affects the price ratios facing consumers and producers in the same way as a trade tax, or by adding the effects of the criteria obtained above in each case. By either method it is readily shown that a tariff (on Y) or an export tax (on X) is equivalent in real terms to: (a) a consumption tax on Y plus a production subsidy on Y ; (b) a consumption tax on Y plus a production tax on X ; (c) a consumption subsidy on X plus a production subsidy on Y ; (d) a consumption subsidy on X plus a production tax on X . And because trade subsidies are negative trade taxes, an export subsidy (on X) or an import subsidy (on Y) can be duplicated by: (e) a consumption subsidy on Y plus a production tax on Y ; (f) a consumption subsidy on Y plus a production subsidy on X ; (g) a consumption tax on X plus a production tax on Y ; (h) a consumption tax on X plus a production subsidy on X . From these relations it follows that: (1) the effects of devaluation can be duplicated or frustrated by changes in commodity taxes and subsidies (since devaluation is equivalent to an import tariff plus an export subsidy); (2) the optimum tariff can be duplicated by commodity taxes; and (3) income transfers can be duplicated by changes in

²² Criterion (34) can be derived directly by differentiating:

$$T = 0 = I_b(D_b, 1/P) - P \left[y_a(D_a, P) - Y_a \left(\frac{P}{t_{pya}} \right) \right]$$

noting that

$$\frac{dD_a}{dt_{pya}} = Y_a.$$

To my knowledge the effects of consumption and production taxes on the terms of trade have not been formally treated in the literature before, although the general direction of their influence is indicated in many classical writings. See, for example, Viner [24, p. 363].

commodity taxes in both countries. A further application is to customs unions; an agreement over tariff reduction has little force if it is not combined with agreement over the domestic tax structures.

Consideration of the commodity-tax structure is necessary before evaluating the desirability of tariff reductions. If there are commodity taxes and subsidies in each country none of the well-known welfare propositions of international trade theory holds. In particular from a "free-trade" (i.e., no *trade* taxes) position, it can be shown that, if there are commodity taxes and subsidies: (1) both countries simultaneously may be better off without, than with, trade; (2) a country may gain by a deterioration in its terms of trade even if the initiating cause occurs in the foreign country; (3) a small tariff may worsen the welfare of the tariff-imposing country even if the foreign offer curve is not infinitely elastic; and (4) the imposition of a tariff may simultaneously improve the welfare of both countries. These propositions follow because commodity taxes overextend or underextend trade.

VIII. *Other Mechanisms of Adjustment*

Thus far we have dealt with the effect of policy changes on the terms of trade, the latter adjusting through price-level or exchange-rate variations. It was argued earlier that authorities may adopt other policies which prevent, or render unnecessary, changes in the terms of trade. This would be the case if authorities pegged the exchange rate and stabilized domestic price levels, relying on, say, trade controls to correct disequilibria. The purpose of this section is to show how the results already obtained can be applied to other mechanisms of adjustment. The procedure to be followed is the same as before: First state the postulate on which dynamic behavior is based, deduce the condition of dynamic stability, and then examine the excess demands caused by the policy changes.

Fiscal Policy and Capital Movements. Suppose that authorities peg the exchange rate and stabilize the domestic price level in each country. The price level may be stabilized in a variety of ways but the simplest for our purpose is to suppose that authorities inflate domestic expenditure by means of a budget deficit when there is deflationary pressure (excess supply of its export good) and deflate domestic expenditure by means of a budget surplus when there is inflationary pressure (excess demand for its export good). We may assume that the deficits and surpluses are financed and disposed of by drawing on or accumulating credits with an international agency—say, the International Monetary Fund. Now since an excess supply of one country's good implies an excess demand for the other country's good it follows that one country will be borrowing at the time another country is lending; and because of

the identity of income (including loans) and expenditure, the rate of lending by one country is equal to the rate of borrowing in the other country, and both are equal (with appropriate signs) to the rate at which the budgets are out of balance.

Whether or not a system based on these rules is stable depends on the effectiveness of the deflation-inflation policy in relieving excess demand for the deflating country's good and excess supply of the inflating country's good. But it is easily seen that this is equivalent to whether a transfer from one country to another will cause an excess supply of the transferring country's good. The system is therefore stable or unstable depending on whether the sum of the marginal propensities to import is less than or greater than unity. The term $1 - m_a - m_b$ also gives the denominator of the criterion showing the direction and amount of lending required to eliminate a given excess demand. (See Figure 7.)

To determine the effects of policy changes on lending in a system obeying the above rules we (as before) find the excess demand due to the policy change with no lending. For example, the excess demand for imports due to a tariff in country A is $-\eta'_a Idl_a$. The change in the trade balance and lending of country A is therefore:

$$(36) \quad \frac{dT}{dl_a} = \frac{\eta'_a I}{1 - m_a - m_b};$$

if the system is stable the tariff improves the trade balance.²⁴ Or we may consider the change in lending and the trade balance due to an increase in productivity in, say, country B:

$$(37) \quad \frac{dT}{dY_b^*} = \frac{m_b}{1 - m_a - m_b};$$

assuming stability, country A must lend to country B to maintain equilibrium in the balance of payments.

In a similar fashion we can find the effects on lending of all the policies discussed in previous sections. It may be helpful to consider two cases. Suppose that country A devalues its currency. Applying the same method we find that the criterion for the change in the balance of trade and lending is:

$$(38) \quad \frac{dT}{dP} = \frac{(\eta_a + \eta_b - 1)I}{1 - m_a - m_b}.$$

It should be noticed that (38) is the reciprocal of (18), the criterion for the change in the terms of trade after transfer. The interpretation is

²⁴ This criterion has been used by Meade [14, p. 155] and derived geometrically by Ozga [21] although in neither case is a distinction made between stable and unstable situations. Ozga's analysis, which was presented to a seminar in London in 1956, greatly improved my own geometrical representations.

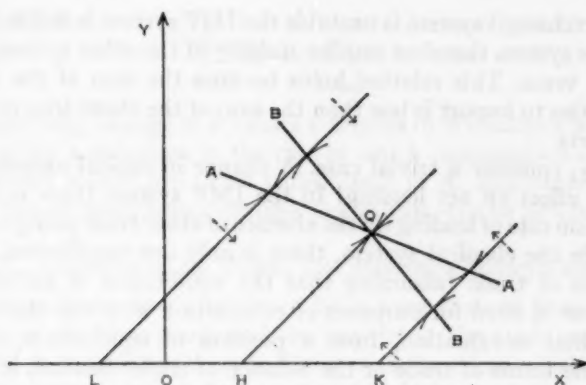


FIGURE 7. STABILITY OF THE "IMF SYSTEM"

Let equilibrium be initially at Q with the government of A lending or giving to the government of B the annual payment OH . It is assumed that exchange rates are fixed and that each government, by means of fiscal policy, stabilizes export price levels.

Now suppose that the equilibrium is disturbed by, say, a private flow of capital of HL from B to A, and that this induces an excess of saving over investment in B, and an excess of investment over saving in A, equal to the transfer. Now if the sum of the marginal propensities to import is less than unity, as in the diagram, the Engel curve of A (AA) must be flatter than the Engel curve of B (BB); the capital flow therefore induces an excess demand for A's good and an excess supply of B's good, and a surplus in A's and a deficit in B's balance of payments.

To correct the disequilibrium, A's government deflates expenditure by means of a budget surplus and turns the proceeds over to the IMF; and B's government inflates expenditure by means of a budget deficit borrowing from the IMF. This process continues until the inflationary pressure in A and the deflationary pressure in B are eliminated, i.e., until the equilibrium Q and the net lending position OH are restored. By similar analysis it can be shown that a movement of capital from A to B in excess of OH (say to OK) will cause deflationary pressure in A and inflationary pressure in B, necessitating government action in each country to eliminate the disequilibrium. In either case the equilibrium Q is stable.

But if the sum of the marginal propensities to import exceeds unity the system is unstable. This may be seen by considering again a movement of capital from B to A of HL . This time the capital movement causes an excess supply of A's good and an excess demand for B's good. A's government therefore inflates expenditure and B's government deflates expenditure, moving the system ever further from equilibrium.

As a practical problem it would be necessary to distinguish between the Engel curves appropriate for different types of transfer.

fundamentally different. In (18) the stability condition is that the sum of the elasticities is greater than unity, while in (38) the stability condition is that the sum of the marginal propensities to import is less than unity. In (18) lending induces—because of the “rules of the gold-standard- (or flexible-exchange-rate-) game”—a change in the terms of trade; in (38) devaluation induces—because of the “rules of the IMF game”—a change in the balance of trade and lending. An interesting result is the following: If the IMF system is unstable the gold standard (or flexible exchange) system is stable; and if the gold standard (or

flexible exchange) system is unstable the IMF system is stable. *Instability* of one system therefore implies *stability* of the other system, though not vice versa. This relation holds because the sum of the marginal propensities to import is less than the sum of the elasticities of demand for imports.

Finally, consider a trivial case. A change in capital exports has no ultimate effect on net lending! In the IMF system there is only one equilibrium rate of lending (in the absence of other trade policy changes), just as, in the classical system, there is only one equilibrium value of the terms of trade (assuming that the equilibrium is unique). This trivial case is cited for purposes of comparison with the classical contention that devaluation, from a position of equilibrium, does not change the terms of trade or the balance of trade: instead, it initiates price level changes which restore the equilibrium terms of trade. A displacement of the variable of adjustment from equilibrium initiates dynamic forces which induce a return to equilibrium.

Similar analysis can be applied to systems of adjustment based on tariff, tax or productivity changes.

IX. Summary

The results of the preceding analysis may all be summarized by introducing all policy parameters into the balance of payments equation and differentiating. We obtain:

$$(39) \quad (1 - m_a - m_b)dT - I(\eta_a + \eta_b - 1)dP - I\eta'_a dt_a + I\eta'_b dt_b - y_a\eta'_{pa} dt_{ca} + x_b\eta'_{xb} dt_{cb} + Y_a\epsilon'_{ya} dt_{pa} - X_b\epsilon'_{xb} dt_{pb} + m_a dX_a^* - m_b dX_b^* = 0$$

where the same terminology is used as before except that *effective* tax rates are used. (Thus dt_a and dt_b refer to the effective rate at which trade taxes are changed in A and B; changes in trade subsidies are subtracted from changes in trade taxes. Similarly dt_{ca} and dt_{cb} represent the effective rate at which consumption taxes or subsidies are changed in A and B; a tax on the consumption of import goods combined with an equal tax on the consumption of home goods would leave the effective rate unchanged. Similarly for production taxes dt_{pa} and dt_{pb} .)

The policy equation (39) shows the relation between policy changes which are necessary to maintain equilibrium in the system; it can be used to show the policy changes which are necessary to offset the disequilibrium caused by other policies. Suppose, for example, country A wishes to know the rate at which it must tax import goods in order to relieve a disequilibrium caused by an increase in productivity in the foreign country. To find the answer set all policy changes except dt_{ca} and dX_b^* equal to zero. This leaves the equation

$$-y_a\eta'_{pa}dt_{ca} - m_b dX_b^* = 0$$

and the answer

$$\frac{dl_{ca}}{dX_b^*} = - \frac{m_b}{y_a \eta_{aa}'}.$$

The productivity change in B causes a surplus in A's balance which can be relieved by a reduction in the rate at which consumption of import goods (export goods) are taxed (subsidized) in A. Any other relation between two or more policy changes can in this way be determined.²⁵

X. Extension of the Model: The Multiple Country Case

The propositions now established have been derived from a model consisting of only two goods and two countries. The traditional use of this model in international trade literature is based on a belief that it suggests "theorems which may be seen to admit of extension to more concrete cases" [3, p. 31]. In this final section general results are derived and it is shown that in at least one important case the propositions previously established for two countries hold for an arbitrary number of countries.

Suppose that there are $n+1$ countries, and let all prices and balances of payments be expressed in terms of the currency of country 0 (e.g., dollars). If prices (of export goods or currencies) are flexible then the balance of each country depends on all prices. The conditions of equilibrium can be written as follows:

$$\begin{aligned} B_1(P_1, \dots, P_n; \alpha) &= 0 \\ * * * * * \\ B_n(P_1, \dots, P_n; \alpha) &= 0 \end{aligned} \quad (40)$$

where α is a parameter representing a particular policy.²⁶ Note that only

^a All of the criteria contained in equation (39) are capable of simple geometric proofs when the variables are taken two at a time.

The above analysis of policy changes has been expounded on the assumption that transport costs are absent; for a geometrical representation of transport costs employing Marshallian offer curves see Mundell [19].

²⁸ Let x_{rs} and X_{rs} be, respectively, consumption and production of the r th good in the s th country, and let T_s be the capital exports of country s . Suppose that there are n countries and $n+1$ goods. Then a general model can be expressed by the following equations:

$$(i) \quad Y_s - D_s = \sum_{r=1}^n P_r(X_{rs} - x_{rs}) = T_s \quad (s = 1, 2, \dots, n)$$

The national "budget" equations: $\text{Income} - \text{Spending} = \text{Lending}$, for each country. If these equations are satisfied each country is on its m -dimensional offer curve.

$$(2) \quad \sum_{r=1}^n (X_r - x_r) = 0 \quad (r = 1, 2, \dots, m)$$

The market clearing equations: World Supply = World Demand, for every good. Notice that the excess supply function of the numeraire, commodity 0 (e.g., gold), is omitted; if equations (1) are satisfied, then the last equation in (2) can be deduced from the others (or vice versa).

where

$$\Delta \equiv \begin{vmatrix} b_{11} & \cdots & b_{1n} \\ \vdots & & \vdots \\ b_{n1} & \cdots & b_{nn} \end{vmatrix} \quad \text{and where } \Delta_{ji} \text{ is the cofactor of the } j\text{th row and the } i\text{th column of } \Delta.$$

Equations (42) provide a general framework into which specific policy changes can be introduced. But in order to evaluate any of the signs, $dP_i/d\alpha$, it is necessary to know the values, or at least the signs, of two kinds of terms: the coefficients $\partial B_j/\partial\alpha$ and the ratios Δ_{ji}/Δ . Now the coefficients $\partial B_j/\partial\alpha$ describe the change in the balances of payments arising from the policy change *at constant prices*: to evaluate these coefficients, then, we can apply the method of comparative statics. The ratios Δ_{ji}/Δ , on the other hand, indicate the interactions of price changes in multiple markets, and the effectiveness of price changes in relieving the initial disequilibrium. In the two-country case these signs were determined by the stability conditions; in the multiple-country case, however, it is easily shown that some of the ratios may be positive while others are negative without conflicting with the conditions of stability. It appears, then, that in evaluating equations (42) we will be left with some positive and some negative terms, and no general presumption about the sign of $dP_i/d\alpha$.

To make progress some restriction on the signs of the elements b_{ij} in the basic determinant Δ is required. The most interesting special case, for present purposes, is that where $b_{ij} > 0$ for $i \neq j$. This assumption means that an increase in the price of the exports of any country, other prices being held constant, improves the balance of payments of every other country; it also implies, by Cournot's Law, that a rise in the price level in one country worsens that country's balance of payments. From this assumption flow two important deductions: (1) the system is stable under the usual dynamic postulates²⁸ [1][4][20];

²⁸ There are two approaches to the stability of international equilibrium. One approach is to treat the world economy like the domestic economy and postulate that the price of any good rises and falls in proportion to the excess demand and supply of that good. For example, the dynamic system may be written as follows:

$$(1) \quad \frac{dP_r}{dt} = k_r \sum_{s=1}^n (x_{rs} - X_{rs})$$

where the summation is over countries. By linearizing (1) (retaining only linear terms of a Taylor series), and translating the resulting partial derivatives into demand and supply elasticities, we obtain:

$$(2) \quad \frac{dP_r}{dt} = k_r X_r \sum_{q=1}^n (\eta_{rq} - \epsilon_{rq})(P_q - P_q^0)$$

where the own elasticities of demand (η_r) and supply (ϵ_r) in the world as a whole are defined to be, normally, negative and positive respectively. The linear system can be stable only if the real parts of the roots of the following equation:

$$(3) \quad |k_r X_r (\eta_{rq} - \epsilon_{rq}) - \delta_{rq} \lambda| = 0$$

and (2) every ratio Δ_{ji}/Δ is negative [18, pp. 49-51]. With this information we can evaluate the direction of change in the terms of trade resulting from many policy changes.

Productivity Changes. Suppose that output and expenditure in country 0, the numeraire country, increase by dX_0^* . At constant prices, assuming no inferior goods, inhabitants of country 0 buy more of all goods, creating a deficit in their own balance and a surplus in the balance of every other country. The surplus in the balance of country i is $m_{i0}dX_0^*$ where m_{i0} is the marginal propensity to spend in country 0 on the goods of the i th country. The typical term in equation (42) is therefore

$$-\frac{\partial B_j}{\partial \alpha} = -m_{j0}.$$

are all negative (δ_{ii} is the Kronecker delta). The theorem on gross substitutes states that if all cross elasticities are positive (including the cross elasticities of demand for the numeraire good) the system is stable.

The above system focuses attention on world markets for particular commodities. Classical international trade theorists on the other hand (with the exception of F. D. Graham) emphasized the importance of disequilibrium in the balance of payments, gold flows and changes in the terms of trade. If we now let P_i denote the world price of the exports of country i we have the following system which is more compatible with the postulates of classical theory:

$$(4) \quad \frac{dP_i}{dt} = h_i B_i(P_1, \dots, P_n) \quad (i = 1, \dots, n)$$

assuming that there are now $n+1$ countries, and that prices are expressed in terms of the exports of country 0. Following the same procedure as above we find that stability requires that the real parts of the roots of the following equation:

$$(5) \quad |h_i b_{ij} - \delta_{ij} \lambda| = 0$$

must all be negative. Again, stability is assured if all $b_{ij} > 0$ for $i \neq j$. If prices were all constant and exchange rates were all flexible the system would be stable if all currencies were gross substitutes.

Generally the systems (1) and (4) are fundamentally different. Goods may all be gross substitutes while some currencies are gross complements, and vice versa. The gap between the two systems narrows, however, when only one country produces each good: In that case an excess world demand for a good implies an excess demand for the currency of the country producing that good.

I have said that the system (4) conforms more closely to the classical system than does system (1). This is not meant to imply that classical theorists would accept even as an approximation the rigid dynamic laws postulated. Consider, for example, the following passage from Marshall's privately circulated manuscript of 1879 [11, pp. 19, 25]:

... so that if we chose to assign to these horizontal and vertical forces any particular laws, we should obtain a differential equation for the motion of the exchange index ... Such calculations might afford considerable scope to the ingenuity of those who devise mathematical problems, but ... they would afford no aid to the economist.

For the mathematical functions introduced into the original differential equations could not, in the present condition of our knowledge, be chosen so as to represent even approximately the economic forces which actually operate in the world. ... Whereas the use of mathematical analysis has been found to tempt men to expend their energy on the elaboration of minute and complex hypotheses, which have indeed some distant analogy to economic conditions, but which cannot properly be said to represent in any way economic laws.

By substitution, then, we get the criterion for the change in the terms of trade of the growing country

$$(43) \quad \frac{dP_i}{dX_0^*} = - \sum_{j=1}^n m_{j0} \frac{\Delta_{ji}}{\Delta}.$$

Every m_{j0} is positive in the absence of inferior goods, and every Δ_{ji}/Δ is negative if all exports are gross substitutes. Therefore *an improvement in productivity unambiguously worsens the commodity terms of trade of the growing country*: the prices of the exports of every other country rise relative to the price of the exports of the growing country.²⁹

Tariff Changes. Suppose that country 0 applies an undiscriminatory tariff equal to dt_0 on all imports. At constant foreign prices the tariff-inclusive price of all imports in country 0 rises by dt_0 . On the assumption that the government spends the tariff proceeds on home goods, the excess demand for the goods of typical country j , at constant foreign

²⁹ Why has country 0, whose exports are numeraire, been chosen as the growing country? Suppose instead that country i grows by dX_i^* . Then substituting in equation (42) the terms

$$-\frac{\partial B_i}{\partial X_i^*} = m_i$$

(the aggregate marginal propensity to import in country i), and the terms

$$-\frac{\partial B_j}{\partial X_i} = -m_{ji},$$

when $i \neq j$, we obtain the criterion:

$$(1) \quad \frac{dP_i}{dX_i^*} = -m_{ii} \frac{\Delta_{ii}}{\Delta} - \dots + m_i \frac{\Delta_{ii}}{\Delta} - \dots - m_{ni} \frac{\Delta_{ni}}{\Delta}.$$

But $m_i \Delta_{ii}/\Delta$ is negative while all the other terms are positive. It would therefore appear that no unambiguous result is possible, and that the method of treating the change as occurring in the numeraire country is a special case.

Nevertheless the economist's intuition tells him that in static analysis the choice of numeraire cannot affect the ultimate change in *relative* prices; and that if the terms of trade of the numeraire country deteriorate when that country grows, the terms of trade of any other country must fall when it grows. He may therefore conclude that P_i must fall in equation (1), that the negative term dominates.

This is in fact correct. Making use of the definition of the aggregate marginal propensity to import, i.e., $m_i = m_{i0} + m_{i1} + \dots + m_{ni}$, we can rearrange (1) to get:

$$(2) \quad \frac{dP_i}{dX_i^*} = m_{i0} \frac{\Delta_{ii}}{\Delta} + m_{i1} \frac{\Delta_{ii} - \Delta_{1i}}{\Delta} + \dots + m_{ni} \frac{\Delta_{ii} - \Delta_{ni}}{\Delta}.$$

Now the first term on the right of (2) is clearly negative. The other terms will be negative if the *principal* cofactor of Δ dominates each of the other cofactors, i.e., if $|\Delta_{ii}| > |\Delta_{ji}|$ ($j \neq i$). But by subtraction of the two cofactors it is easily shown that the resulting $(n-1)$ th order determinant $\Delta_{ii} - \Delta_{ji}$ has all the characteristics of Δ (positive off-diagonal elements and dominant negative diagonal elements) except that its sign is opposite to the sign of Δ . (An analogous theorem has been proved by Metzler in analysis of the matrix multiplier.) All the terms on the right of (2) are therefore negative, so P_i must fall as a result of growth in country i .

To avoid these complications I have, in the text, supposed that the policy change occurs in the country whose exports are numeraire, though the result is perfectly general. The same applies to the analysis of tax and tariff changes analyzed below.

prices, is $-\eta_{j0}I_{j0}dt_0$, where η_{j0} and I_{j0} are, respectively, the elasticity of demand for imports (with respect to own price) and the level of imports, from country j to country 0. The typical term from the general equation (42) becomes

$$\frac{-\partial B_i}{\partial t_0} = \eta_{j0}I_{j0}.$$

The criterion for the change in the terms of trade of country 0 is therefore:

$$(44) \quad \frac{dP_i}{dt_0} = \sum_{j=1}^n \eta_{j0}I_{j0} \frac{\Delta_{ji}}{\Delta}.$$

The elasticities are all defined to be positive (Giffen goods are ruled out by the assumption of gross substitution) so the conclusion is again unambiguous: *An increase in tariffs raises the price of the exports of the tariff-imposing country relative to the prices of the exports of all other countries*, on the assumption that tariff proceeds are spent on home goods.³⁰

Consumption and Production Tax Changes. The effects of a consumption tax on import goods are equivalent to the effects of a tariff if there is no domestic production of these goods. If there is domestic production of import goods then the typical term, from the skeleton equation (42), is $\eta_{cj0}y_{j0}$, where η_{cj0} is the elasticity of consumer demand in 0 for the products exported by country j , and y_{j0} is the level of domestic consumption of these products. This assumes again that tax proceeds are spent on domestic goods. The criterion for the change in the relative price of the exports of the typical country i is therefore:

³⁰ If the tariff proceeds are redistributed to consumers an income effect must be added to each term in (44). The tariff proceeds are equal to $I_0 dt_0$, where I_0 is the initial aggregate level of imports, so the typical income term is $-m_{j0}I_0$. The criterion then becomes:

$$\frac{dP_i}{dt_0} = \sum_{j=1}^n [\eta_{j0}I_{j0} - m_{j0}I_0] \frac{\Delta_{ji}}{\Delta} = \sum_{j=1}^n [\eta_{j0}'I_{j0} - m_{j0}(I_0 - I_{j0})] \frac{\Delta_{ji}}{\Delta}$$

which makes use of the relation between net and gross elasticities, $\eta_{j0} = \eta_{j0}' + m_{j0}$. Notice that the sign of dP_i/dt_0 is not unambiguously determined; in both equations the coefficients of the cofactors are composed of one positive and one negative term, and we have no information about which term is dominant. It is therefore possible that some prices rise relative to the price of the exports of the tariff-imposing country.

This indefinite result differs from the two-country analysis where the net effect of the tariff is a pure substitution effect away from imports and to home goods. On the assumption that all exports are gross substitutes, and that no goods are inferior, all substitution effects are positive in the multiple-country analysis also; but it cannot, as far as I know, be proved that the net effect of the tariff is a shift of demand away from the imports of every country. A tariff applied to the exports of a particular country creates a deficit in that country's balance of payments equal to a pure substitution effect; but if, in addition, tariffs are applied to the exports of third countries, the income effect resulting from the distribution of the tariff proceeds of the third countries to some extent offsets or reverses the initial deficit in the first country's balance.

It should be possible to prove, however, that at least some foreign prices fall relative to the price of the exports of the tariff-imposing country, by making use of the proposition that net substitution must be away from imports and to home goods.

$$(45) \quad \frac{dP_i}{dt_{e0}} = \sum_{j=1}^n \eta_{ej0} Y_{j0} \frac{\Delta_{ji}}{\Delta}$$

which is necessarily negative. Thus *the terms of trade improve with respect to all countries as a result of a tax on imported goods*. By similar analysis it can be shown that the terms of trade worsen as a result of an increased tax on the consumption of export goods. And by changing signs we get the criteria for the effects of subsidies on the consumption of import and export goods.

By similar analysis it can be shown that the typical coefficient of (42) resulting from a tax on the production of exportable goods is $\epsilon'_{pj0} Y_{j0}$, where ϵ'_{pj0} is the elasticity of supply in country 0 of the good exported by the j th country, and Y_{j0} is the domestic production (i.e., the production in 0) of the good exported by the j th country. The criterion is therefore:

$$(46) \quad \frac{dP_i}{dt_{p0}} = \sum_{j=1}^n \epsilon'_{pj0} Y_{j0} \frac{\Delta_{ji}}{\Delta}.$$

Thus if supply elasticities are all positive *a tax on the production of exportables improves the terms of trade of the taxing country with respect to all other countries*. [Note that each term in (46) is zero if country 0 is completely specialized.] The same criterion applies, *mutatis mutandis*, for production taxes on imported goods, or production subsidies. (See Figure 8.)

Unilateral Payments. Suppose that country 0 pays country S an annual tribute, or gift, or loan (ignoring interest payments). Then expenditure in 0 decreases and in S decreases by the amount of the payment. The demand for all goods in 0 decreases and in S increases if there are no inferior goods. At constant prices the deficit created by these expenditure changes in the balance of payments of the j th country is $(m_{j0} - m_{js})dT_{s0}$, where dT_{s0} is the value of the transfer. The criterion for the change in the price of exports in the receiving country, relative to the price of the exports of the paying country, is therefore:

$$(47) \quad \frac{dP_s}{dT_{s0}} = \sum_{j=1}^n (m_{j0} - m_{js}) \frac{\Delta_{js}}{\Delta}.$$

[In the term $j=s$ the coefficient is $(m_{s0} - m_{ss}) = (m_{s0} - c_s) = (m_{s0} + m_s - 1)$ where c_s and m_s are, respectively, the marginal propensities to consume and import in country S.] The unilateral payment, through expenditure changes in the transferor and transferee, rearranges demand throughout the world in a way which does not permit any a priori generalization, a result which can be expected from the analysis of transfer between two countries.³¹

³¹ The propositions in this section require modification if there are limiting cases such as infinite or zero elasticities, and zero or negative marginal propensities to spend.

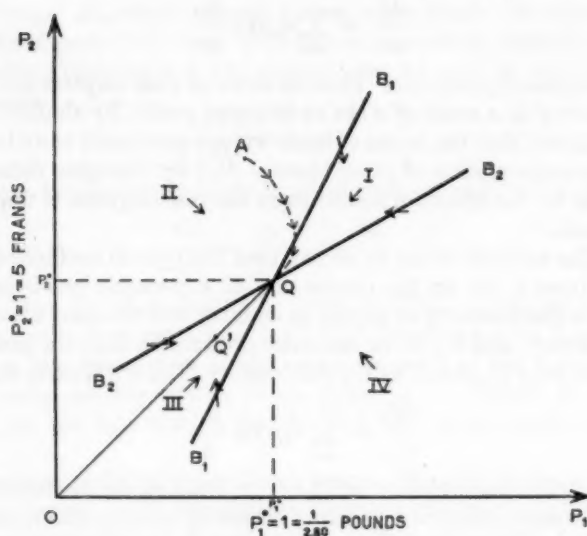


FIGURE 8. MULTIPLE-COUNTRY STABILITY CONDITIONS

Assume three countries, the U.S. (0), the U.K. (1) and France (2) with the respective currency prices (expressed in dollars) 1, P_1 and P_2 . Choose units of pounds and francs so that, at equilibrium, P_1 and P_2 are each unity. (If equilibrium ratios are $\$1 = 1/2.80$ pounds = 5 francs then $1/2.80$ pounds and 5 francs become the British and French currency units.) The two curves B_1B_1 and B_2B_2 trace the loci of pound-franc prices which allow equilibrium in the British and French balances. At Q both balances are in equilibrium implying, by Cournot's Law, equilibrium in the U.S. balance.

If all currencies are gross substitutes both curves have positive slopes: this follows because appreciation of the franc must be associated with appreciation of the pound to maintain equilibrium. Moreover, B_1B_1 has a slope greater than 45 degrees and B_2B_2 has a slope less than 45 degrees; this follows because of our choice of currency units and because appreciation of the dollar is equivalent to depreciation of the franc and pound in equal proportion; a movement along the line OQ from Q to Q' must improve the French and British balances and worsen the U.S. balance. Four quadrants can then be identified: east and west of B_1B_1 there are deficits and surpluses, respectively, in the British balance; and north and south of B_2B_2 there are deficits and surpluses in the French balance.

On the dynamic assumption that the dollar prices of pounds and francs rise and fall in proportion to the disequilibrium in the British and French balances, the arrows in each quadrant indicate the forces impelling a return to equilibrium. The reader may easily satisfy himself that the equilibrium position, once disturbed, will be restored. From the disequilibrium position A , for example, the path may follow the broken line AQ , becoming "trapped" in Quadrant I; or it may become trapped in Quadrant III and hence move to equilibrium.

To determine geometrically the movement of the prices as a result of policy changes it is necessary to indicate the direction in which the two curves shift. If U.S. output and expenditure increase, more British and French goods are demanded at constant prices improving both British and French balances; the two curves therefore shift away from the origin and the new equilibrium point moves to somewhere in Quadrant I. Similarly, for the tariff and tax changes analyzed in the text both curves shift toward the origin with an unambiguous improvement in the U.S. terms of trade.

One special case, however, is of interest in view of recent discussions of foreign aid and "tied" exports. Suppose that country 0 makes a gift to a foreign country but requires that the gift be spent on its own exports. (It may be supposed that the gift is financed by taxation and that the financial transfer involves the grant of credits from an export-import bank.) In this case the price of the exports of the paying country rises relative to the price of the exports of the receiving country (all the terms m_{ij} are zero). This does not imply, however, that the transfer "burden" is negative—that real income in the transferring country declines by less than the gift—since the prices of the exports of some of the third countries may rise. It further assumes that the receiving country does not re-export the tied exports to third countries.

Comparison of Two-Country and Multiple-Country Models. The foregoing account of policy changes in a system containing many national units naturally leads to more complicated conclusions than in the case of a system containing only two countries. Applying only the restrictions of stability, I have not been able to show that two-country and multiple-country systems lead to substantially the same conclusions. The difficulty lies in relations of gross complementarity among the exports of the various countries. Gross complementarity is consistent with stability in the multiple-country system but inconsistent with stability in the two-country system. The two-country model cannot therefore be expected to suggest "theorems which admit of extension to more concrete cases" when gross complementarity is involved.

However, when gross complementarity is absent—when all exports are gross substitutes—there is a remarkable similarity between the conclusions of the two models. Productivity, tariff and tax changes move the terms of trade in the same direction in the many-country system as in the simpler system. The explanation of this similarity lies in what may be called the Law of Composition of Countries. If all foreign exports are *perfect* substitutes for each other, the foreign countries can be aggregated into a composite country and called the "rest of the world"; in that case the conclusions of the two models will agree both qualitatively and quantitatively. But if foreign exports are only *imperfect* substitutes for each other exact results cannot be obtained by the use of a composite country. However, while the *quantitative* conclusions of the two models will in this case differ, the *qualitative* conclusions, with one qualification,³² remain. There is a presumption, then, that the use of two-country models will not be subject to serious error provided that all exports are gross substitutes.

³² The qualification refers to the treatment of income effects examined in footnote 31.

The most important generalization of the classical system has been provided by Mosak [18].

REFERENCES

1. K. J. ARROW and L. HURWICZ, "On the Stability of the Competitive Equilibrium, I," *Econometrica*, Oct. 1958, 26, 522-52.
2. A. COURNOT, *Researches into the Mathematical Principles of the Theory of Wealth*. Transl. by T. Bacon. New York 1897.
3. F. Y. EDGEWORTH, *Papers Relating to Political Economy*, Vol. 2. London 1925.
4. F. HAHN, "Gross Substitutes and the Dynamic Stability of General Equilibrium," *Econometrica*, Jan. 1958, 26, 169-70.
5. A. O. HIRSCHMAN, "Devaluation and the Trade Balance: A Note," *Rev. Econ. Stat.*, Feb. 1949, 31, 50-53.
6. H. G. JOHNSON, "Economic Expansion and International Trade," *Man. School Econ. Soc. Stud.*, May 1955, 23, 95-112.
7. ———, "The Transfer Problem and Exchange Stability," *Jour. Pol. Econ.*, June 1956, 64, 212-25.
8. ———, "Increasing Productivity, Income-Price Trends and the Trade Balance," *Econ. Jour.*, Sept. 1954, 64, 462-85.
9. W. LEONTIEF, "A Note on the Pure Theory of Transfer," *Explorations in Economics*, New York 1936, pp. 84-92.
10. A. P. LERNER, "The Symmetry between Import and Export Taxes," *Economica*, Aug. 1936, 3, 308-13.
11. A. MARSHALL, *The Pure Theory of Foreign Trade*. London 1879; reprinted 1930.
12. ———, *Money Credit and Commerce*. London 1923.
13. J. E. MEADE, *A Geometry of International Trade*. London 1952.
14. ———, *The Balance of Payments Mathematical Supplement*. London 1951.
15. ———, "A Geometrical Representation of Balance-of-Payments Policy," *Economica*, Nov. 1949, 16, 305-20.
16. L. A. METZLER, "Tariffs, the Terms of Trade, and the Distribution of National Income," *Jour. Pol. Econ.*, Feb. 1949, 57, 1-29.
17. J. S. MILL, *Principles of Political Economy*, Vol. 2. New York 1896.
18. J. L. MOSAK, *General Equilibrium Theory in International Trade*. Indiana 1944.
19. R. A. MUNDELL, "Transport Costs in International Trade Theory," *Can. Jour. Econ.*, Aug. 1957, 23, 331-48.
20. T. NEGISHI, "A Note on the Stability of an Economy where All Goods Are Gross Substitutes," *Econometrica*, July 1958, 26, 445-47.
21. S. A. OZGA, "Tariffs and the Balance of Payments," *Quart. Jour. Econ.*, Nov. 1957, 71, 630-8.
22. P. A. SAMUELSON, *Foundations of Economic Analysis*. Cambridge 1953.
23. ———, "The Transfer Problem and Transport Costs: The Terms of Trade When Impediments are Absent, I," *Econ. Jour.*, June 1952, 62, 278-304.
24. J. VINER, *Studies in the Theory of International Trade*. New York 1937.

MARX'S "INCREASING MISERY" DOCTRINE

By THOMAS SOWELL*

Economists often assume as almost self-evident that Karl Marx's prediction of ever-increasing misery for the workers under capitalism refers to a decline in the amount of goods and services they will receive. Some writers have implied that only the intellectually dishonest could deny this view. It is readily inferred that the interpretation of Marx to mean a decline in labor's relative share is only an afterthought of latter-day Marxists seeking to salvage something from the ruins of the prediction [18, p. 383] [1, p. 213] [23, pp. 155-57] [3, p. 324] [22, pp. 34-35] [16, p. 61]. While labor's relative share has not declined, this at least has the dignity of a plausible prediction which went unfulfilled, while a theory of absolute misery would be thoroughly discredited by history. That some consideration of this sort has in fact provided the subjective motivation for some statements on this point by latter-day Marxists is probable, but to say that this is the only possible basis for the "relative misery" interpretation is something very different. It will be argued here that relative misery was precisely what Marx's prediction referred to, in so far as it was concerned with the purely economic aspect of the workers' condition. It will be further argued that Marx was not solely concerned with this aspect.

A standard argument against the relative-misery interpretation is that while "some passages in Marx . . . bear interpretation in this sense, this clearly violates the meaning of most" [22, p. 35]. In order to avoid this charge, the argument that follows will not cite passages from Marx which "bear interpretation" as relative misery, but only such passages as bear interpretation in no other way. This argument, however, will not be simply a passage-quoting one, but will attempt to show how the substantive meaning of Marx's increasing misery prediction turns in part on the Marxian conception of the "value of wages"—which depends in turn on the whole value framework of Marxian economics, derived from Ricardian economics, whose peculiar conceptual framework caused similar misunderstandings of Ricardo long before Marx wrote *Capital*.

It will be shown that Marx was fully aware of Ricardo's peculiar

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conception of the value of wages, and explicitly endorsed it. In addition to exploring (1) the meaning of the value of wages in Ricardian-Marxian terms, and especially the meaning of a rise or a fall of wages in such terms, is will be necessary to consider (2) the meaning of Marxian "subsistence" and its relevance here, as well as (3) some of the arguments used to support the absolute misery interpretation, and (4) the noneconomic dimension of Marxian "misery."

I. *The Value of Wages*

Conventional economic theory has long made a distinction between the amount of money which the worker receives as wages, and the amount of goods and services which this money will buy. Adam Smith spoke of "real wages" and "nominal wages" in this sense.¹ David Ricardo, from whom much of Marx's economic apparatus is derived, also used the terms "real wages" and "nominal wages," but because of the nature of his system, they meant something very different. What Adam Smith and other economists called "real wages" was included under "nominal wages" by Ricardo [24, p. 50]. Real wages, in Ricardo's terminology, meant the value of wages, that is, the amount of *labor* contained in the commodities which the worker received. Ricardian real wages measured the degree to which the workers shared in total output, not the absolute amount of goods and services which they received.² If, due to increased productivity, the workers should receive a greater quantity of goods representing a smaller share of output, then—in Ricardian terms—wages would have *fallen*. Ricardo declared that "it will not the less be a real fall, because they might furnish him with a greater quantity of cheap commodities than his former wages" [24, p. 50]. Marx follows this same line of reasoning:

... it is possible with an increasing productiveness of labour, for the price of labour-power to keep on falling, and yet this fall to be accompanied by a constant growth in the mass of the labourer's means of subsistence [5, p. 573].

More important than such parallel statements is the fact that Marx saw the peculiarity of the Ricardian conception of wages and deliberately made it his own, not simply as an accidental by-product of using

¹ He was not always consistent as to the basis for the dichotomy.

² [24, pp. 49-50]. The point is more succinctly expressed by J. S. Mill: "In his [Ricardo's] language wages were only said to rise, when they rose not in mere quantity but in *value*. . . . Mr. Ricardo, therefore, would not have said that wages had risen, because a labourer could obtain two pecks of flour instead of one, for a day's labour. . . . A rise of wages, with Mr. Ricardo, meant an increase in the cost of production of wages . . . an increase in the proportion of the fruits of labour which the labourer receives for his own share . . ." [17, pp. 96-97].

Ricardo's so-called "labor theory of value," but because he, Marx, felt that there was a valid social philosophy implicit in this conception:

The value of wages has to be reckoned not on the basis of the quantity of necessities which the worker receives, but on the basis of the quantity of labour which these necessities cost—actually the proportion of the working day which he appropriates for himself . . . It is possible that, reckoned in use value (quantity of commodities or money), his wages may rise as productivity increases, and yet reckoned in value they may fall . . . It is one of Ricardo's greatest merits that he made an examination of relative wages and established them as a definite category. Previously wages had always been looked upon as a simple element, and consequently the worker had been regarded as an animal. In Ricardo, however, he is considered in his social relationship. The position of the classes in relation to each other depends to a greater extent on the proportion which the wage forms than on the absolute amount of the wage. [10, p. 320]

Marx seemed particularly concerned to emphasize the relative-share approach because of the economic prerequisites of increased wages under capitalism:

A noticeable increase in wages presupposes a rapid growth of productive capital. The rapid growth of productive capital brings about an equally rapid growth of wealth, luxury, social needs, social enjoyments. Thus, although the enjoyments of the worker have risen, the social satisfaction that they give has fallen in comparison with the state of development of society in general. Our needs and enjoyments spring from society; we measure them, therefore, by society and not by the objects which serve for their satisfaction. Because they are of a social nature, they are of a relative nature. [12, Sec. IV, p. 37]

But while it is clear that Marx regarded a relative decline in wages as a real fall in wages, this does not dispose of the possibility that he may have, in addition, felt that real wages in the conventional sense would also fall over time under capitalism. And in fact, the evidence seems to indicate that at an early period in his writings, probably up through the time of the *Communist Manifesto* in 1848, he did in fact believe that absolute impoverishment would be the lot of the working class under capitalism. The *Manifesto* flatly declared: "The modern labourer . . . instead of rising with the progress of industry, sinks deeper and deeper below the conditions of existence of his own class" [13, p. 36]. Marx's unfinished manuscripts of this period also seem to suggest a belief in either stable or declining real wages (again, in the conventional sense) [4, pp. 274-79] [15, p. 351]. All of this, however, was written before Marx's long years of study in the British Museum, and also at a time ("the hungry 'forties") when in fact the standard of living of workers seemed to be either unchanging or deteriorating.

Between this period in the 1840's and the publication of the first volume of *Capital* in 1867, German socialists and communists put forth the so-called "iron law of wages," which declared that wages could not rise under capitalism. Some latter-day critics have attempted to associate Marx with this "iron law" [21, pp. 531-32] [3, p. 311], but in fact Marx heaped scorn and ridicule on it in his *Critique of the Gotha Programme* in 1875. Significantly, he characterized it as a view that was now outmoded and constituted an "outrageous retrogression" in the light of recent, more "scientific" understanding of wages [7, Sec. II, p. 15]. Engels was less indirect in referring to the publication of the first volume of *Capital* which, he declared, now showed that the laws of wages "are in no sense iron but on the contrary very elastic," in contrast to the "antiquated economic view" represented by Lassalle's "iron law" [14, p. 335]. These vague and oblique references to "antiquated" ideas and "retrogression" only hinted at what Engels was later to state openly, that Lassalle's iron law was derived from his and Marx's writings of the 1840's and represented views now discarded.²

From the point of view of the developed Marxian theories, Lassalle's iron law represented not merely a false statement but, more importantly, a false issue. It was the exploitation of the worker that was the central issue to Marx, who declared that this exploitation must grow worse, *regardless* of whether wages go up or down:

... the wage worker has permission to work for his own life, i.e., to *live*, only in so far as he works for a certain time gratis for the capitalist . . . consequently, the system of wage labour is a system of slavery, and indeed of a slavery which becomes more severe in proportion as the social productive forces of labour develop, whether the worker receives better or worse payment. . . .

It is as if, among slaves who have at last got behind the secret of slavery and broken out in rebellion, a slave still in thrall to obsolete notions were to inscribe on the programme of the rebellion: Slavery must be abolished because the upkeep of slaves in the system of slavery cannot exceed a certain low maximum! [7, Sec. II, p. 15]

The idea that increasing misery accompanies the growth of capitalism "whether the worker receives better or worse payment" occurs also in *Capital*, where Marx declares that "in proportion as capital accumulates, the lot of the labourer, be his payment high or low, must grow worse" [5, pp. 708-9]. In fact, this statement occurs in the very same

² Marx declared in *The Poverty of Philosophy* (1847): "The natural price of labour is no other than the wage minimum." Engels, in the German edition of 1885, attached to this statement of Marx's the following footnote: "The thesis that the 'natural,' i.e., normal, price of labour power coincides with the equivalent in value of the means of subsistence absolutely indispensable for the life and reproduction of the worker was first put forward by me [in 1844]. . . . As seen here, Marx at that time accepted the thesis. Lassalle took it over from both of us" [8, p. 45n] (emphasis added).

paragraph as that statement so often quoted to support the interpretation of the "absolute misery" school:

Accumulation of wealth at one pole is, therefore, at the same time accumulation of misery, agony of toil, slavery, ignorance, brutality, mental degradation at the opposite pole. . . [5, p. 709]

This and similar statements do not support either interpretation, since it is precisely the meaning of such statements which is at issue.

II. Subsistence

An increasing misery which can occur in spite of increasing wages (in the ordinary sense) does not, however, preclude decreasing wages. Neither does the definition of rises and falls in relative terms, of itself, preclude absolute misery, since relative misery carried beyond a certain point would also be absolute misery. In order to see what limits, if any, Marx assigned to this relative misery, some consideration of Marxian "subsistence" is required.

Marx's subsistence has sometimes been regarded as being minimum physical subsistence, or something very close to it—or, at least, something *fixed* at a definite level. Some writers have extended this idea to mean that Marx assumes a subsistence level toward which wages might tend to fall over time [20, pp. 908-11, esp. 910n.]. But this particular theory is entirely absent from Marx. There is not a secular tendency for wages to fall *to* subsistence; rather, workers tend to be *at* subsistence, but the content of this subsistence changes, consisting as it does of both "natural wants" and "so-called necessary wants" which are "the product of historical development" [5, p. 190]. However one might object to Marx's (and other economists') use of subsistence in this sense, the substance of his meaning is plain. The value of a worker's labor-power is that "value" or embodied labor "required for the conservation and reproduction of his labour-power, regardless of whether the conditions of this conservation and reproduction are scanty or bountiful, favorable or unfavorable" [6, p. 956]. It is sometimes claimed that a wage level fixed at subsistence (in the ordinary sense) is a necessary condition for Marx's theory of surplus value [23, p. 94], but in fact it is only necessary to show a difference between the output of labor and the output required to sustain the laborer.⁴

Marx's picture of the worker at subsistence, therefore, does not preclude increases in real wages in the conventional sense. Once a new

⁴ Marx made this point in his criticism of the Physiocrats who assumed a fixed subsistence or value of labor-power: "If they made the further mistake of conceiving the wage as an unchangeable amount, in their view entirely determined by nature—and not by the stage of historical development, a magnitude itself subject to fluctuations—this in no way affects the abstract correctness of their conclusions, since the difference between the value and the profitable use of labor power does not in any way depend on whether the value is assumed to be great or small" [10, p. 45].

higher standard of living becomes established, it too becomes subsistence, and represents the new value of labor-power, i.e., the real-wage level. Marx does not have a determinate theory of wages; how labor shares in the increasing productivity is a matter of bargaining power: it "depends on the relative weight, which the pressure of capital on the one side, and the resistance of the labourer on the other, throws into the scale" [5, pp. 572-73]. The Ricardian-Marxian conception is here manifested in the word "resistance." The worker is resisting a *fall* in wages, although Marx declares that the "lowest limit" of this fall is a wage which will purchase the former sum of commodities [5, p. 572]. If wages fall to any point above "the lowest possible point consistent with its new value," then despite this fall, "this lower price would represent an increased mass of necessaries" [5, p. 573]. Marx credits Ricardo with the original formulation of this law. Far from being a law of increasing misery in the conventional sense, it represents a law of a customary floor under wages, which would *prevent* such an occurrence.

A crucial but unstated assumption in Marx's increasing misery doctrine is that the workers themselves will judge wage movements from this relative point of view; otherwise Marxian "misery" when accompanied by material prosperity need never provoke revolution. Another assumption in both Marxian and Ricardian illustrations is a falling price level with increased productivity, so that it is meaningful for them to speak of a fall in wages in money terms, as well as in value terms, and to speak of a "cheapening" of commodities.

III. Arguments for the "Absolute Misery" Interpretation

It is sometimes asserted that Marx's theory was that increasing productivity with the same capital-labor ratio would raise wages, but that capital-intensive (labor-saving) growth tended to decrease wages by causing technological unemployment, with the "reserve army of the unemployed" dragging down wages. This is true as long as it is kept in mind that wage movements are in value terms, and may be said to fall in money terms only on the Ricardian-Marxian assumption of increasing purchasing power of money with growing productivity. Moreover, capital-intensive growth introduced an element of *absolute* misery for those particular workers displaced by new technology. Marx brings this point in against those who argue a necessary connection between the growth of capital and the material well-being of the worker [12, Sec. V, p. 43]. He is further concerned to explode the contention that this is only a "temporary" inconvenience, by asserting that "since machinery is continually seizing upon new fields of production, its temporary effect is really permanent" [5, p. 471]. Capital-intensive growth,

for Marx, not only deprives the worker of his rightful share in increasing productivity by lowering his ability to "resist" the capitalist's encroachments, it causes an absolute decline in living standards for those displaced by machinery.

Marx's theory of the growth of what he calls "official pauperism" is sometimes cited as an argument for the "absolute misery" interpretation. However, as Marx defines his terms, "official pauperism" covers those no longer in the labor force, that is, "that part of the working-class which has forfeited its condition of existence (the sale of labour-power) and vegetates upon public alms" [5, p. 717]. The view that this group will tend to increase with the growth of capitalism is not the same thing as a theory of increasing absolute misery for the working class as a whole, and in fact is only a small part of Marx's picture.

Marx often speaks of a "tendency" of capitalists, or capitalism, to reduce wages in terms which suggest absolute impoverishment. The other side of Marx's coin, however, is the countertendency of the workers to increase wages as much as possible. He speaks of

... the continuous struggle between capital and labour, the capitalist constantly tending to reduce wages to their physical minimum, and to extend the working day to its physical maximum, while the working man constantly presses in the opposite direction.

The matter resolves itself into a question of the respective powers of the combatants. [11, Sec. XIV, p. 67] [*cf.* 5, pp. 657-58]

Although Marx seems to have a purely "bargaining power" theory of wages, the possible range of wages is limited by the customary standard of living as a floor, and by a ceiling representing wages high enough to threaten the existence of capitalism itself: "the oscillation of wages is penned within limits satisfactory to capitalist exploitation" [5, p. 843].

It has been claimed that Marx's increasing misery theory is logically inconsistent with his theory of a falling rate of profit [19, p. 36]. Obviously if one dichotomizes output into wage income and property income, both cannot fall simultaneously (unless output declines). But here again Marx's theory must be understood in Marx's terms. He divides output *three* ways: into wage income ("variable capital"), property income ("surplus value") and replacement of depreciated machinery and raw materials, etc. ("constant capital"). There is nothing to prevent the proportions of the first two from being less in later periods than in earlier periods, with a secular rise in the proportion of the third. In the Marxian theory it is the *rate* of profit which tends to decline, while the mass increases,⁵ and the share of labor that falls rather than ordinary real wages.

⁵ "The same laws, then produce for the social capital an increase in the absolute mass of profit and a falling rate of profit" [6, p. 256].

IV. *The Noneconomic Dimension of "Misery"*

The noneconomic aspect of increasing misery rests on Marx's philosophical approach and his underlying conception of man. The Marxian mode of analysis follows the Hegelian dialectical approach in so far as it tends to analyze things not simply as they are, but as they are potentially. This applies not only to social and economic systems, but also to man in general and the worker in particular. Thus the extent to which the worker is given scope for unfolding his inner potentialities is a vital part—if not *the* vital part—of his well-being.

Work, to Marx, is precisely the instrumentality of this realization of his potentiality by the individual, as well as by mankind. Work is not a mere disutility to be endured for the sake of satisfying material human wants—in which case material production would then be the measure of (absolute or relative) well-being. On the contrary, work is itself "life's prime want" [7, Sec. I, 3, p. 10], because it contributes to the development of the individual. This is dialectical development: "A caterpillar *grows* into a bigger caterpillar; it *develops* into a butterfly" [2, p. 80]. Not so the worker under capitalism: "If the silk worm were to spin in order to continue its existence as a caterpillar, it would be a complete wage-worker" [12, Sec. I, p. 22]. Yet work can be an end in itself, and its performance a satisfaction: "Milton produced *Paradise Lost* for the same reason that a silk worm produces silk. It was an activity of his nature" [10, p. 186]. Marx was annoyed at economists like Adam Smith who treated the expenditure of labor time "as the mere sacrifice of rest, freedom and happiness, not as [at] the same time the normal activity of living beings [5, p. 54n.]. World history, for Marx, represents the drama of "the creation of man by human labour . . ." [9, p. 246].

Under capitalism, Marx argues, work no longer fulfills its vital role in the lives of the people. The division of labor under capitalism "attacks the individual at the very roots of his life" [5, p. 399]. It converts the worker into "a crippled monstrosity" by developing his manual dexterity in a narrow detail "at the expense of a world of productive capabilities and instincts; just as in the States of La Plata they butcher a whole beast for the sake of his hide or his tallow" [5, p. 396]. What is more relevant to the present question, Marx declares that this must grow worse over time under capitalism. The same methods which increase productivity are methods which "mutilate the labourer into a fragment of a man" and "estrangle from him the intellectual potentialities of the labour-process in the same proportion as science is incorporated in it as an independent power [5, p. 708]. This is a vital part of

the picture which leads Marx directly to the conclusion that "in proportion as capital accumulates, the lot of the labourer, be his payment high or low, must grow worse" [5, pp. 708-9].

Although this aspect of well-being (or lack of well-being) is often overlooked by his interpreters, it was supremely important to Marx himself. He described it as "a question of life and death" that the worker under capitalism, "crippled by life-long repetition of one and the same trivial operation, and thus reduced, to the mere fragment of a man" be replaced by "the fully developed individual . . . to whom the different social functions he performs are but so many modes of giving free scope to his own natural and acquired powers" [5, p. 534].

V. *Concluding Remarks*

Because Marx saw a tendency for industry to become more capital-intensive, he postulated a secular decline in the proportion of outlays on wages (variable capital) to outlays on plant and equipment (constant capital) and property incomes (surplus value)—a "fall" in wages. This fall might conceivably go so far as to deprive the workers of any increase in their standard of living, but whether it would go that far depended upon the relative bargaining power of capital and labor, the latter "resisting" the fall in wages through trade unions, etc. If the fall could be arrested at any point above the previously existing subsistence level, then the "lower" wages would represent an increased quantity of goods, although the value of these goods would be less—that is, the workers would be spending less of their working day producing their own livelihood and more of it producing surplus value for the capitalists.

A more important question to Marx than the movement of wages, even in relative terms, was the question of the self-realization of men through their practical physical and mental exertions. Man, as the sum total of his potentialities, is only successively revealed through the exercise of his faculties. Under capitalism, Marx argues, the worker "does not fulfill himself in his work, but denies himself" and "has a feeling of misery . . ." [9, p. 169]. This misery becomes progressively worse with the growth of capitalism as the worker is increasingly estranged "from the intellectual potentialities of the labour-process. . . ." For Marx this is a fundamental deprivation which cannot be remedied by higher wages.*

* Marx asserts that this is the situation for the class, but does not deny that gifted individuals may escape the class situation. His attitude towards social mobility in this context is distinctly negative, since he sees it as strengthening and perpetuating the system as a whole: "The more a ruling class is able to assimilate the most prominent men of a ruled class, the more solid and dangerous is its rule" [6, p. 706].

REFERENCES

1. M. M. BOBER, *Karl Marx's Interpretation of History*. Cambridge, Mass. 1948.
2. M. CORNFORTH, *Materialism and the Dialectical Method*. New York 1953.
3. A. GRAY, *The Socialist Tradition*. London 1947.
4. H. MARCUSE, *Reason and Revolution*. New York 1954.
5. K. MARX, *Capital*, Vol. I. Chicago 1906.
6. ———, *Capital*, Vol. III. Chicago 1909.
7. ———, *Critique of the Gotha Programme*. New York 1938.
8. ———, *The Poverty of Philosophy*. Moscow 1935.
9. ———, *Selected Writings in Sociology and Social Philosophy*, ed. T. B. Bottomore and M. Rubel. London 1956.
10. ———, *Theories of Surplus Value*. New York 1952.
11. ———, *Value, Price and Profit*. Moscow 1947.
12. ———, *Wage, Labour and Capital*. Moscow 1947.
13. ——— AND F. ENGELS, "The Communist Manifesto," *A Handbook of Marxism*, ed. E. Burns, New York 1935, pp. 21-59.
14. ———, *Selected Correspondence*. New York 1942.
15. F. MEHRING, *Karl Marx*. New York 1935.
16. G. MEIER AND R. BALDWIN, *Economic Development*. New York 1957.
17. J. S. MILL, *Essays on Some Unsettled Questions of Political Economy*. London 1877.
18. L. VON MISES, *Socialism*. London 1936.
19. J. ROBINSON, *An Essay on Marxian Economics*. London 1947.
20. P. A. SAMUELSON, "Wages and Interest: Marxian Economic Models," *Am. Econ. Rev.*, Dec. 1957, 47, 884-912.
21. ———, *Economics—An Introductory Analysis*. New York 1955.
22. J. A. SCHUMPETER, *Capitalism, Socialism and Democracy*. New York 1950.
23. J. STRACHEY, *Contemporary Capitalism*. London 1956.
24. *The Works and Correspondence of David Ricardo*, ed. P. Sraffa. Vol. I: *On the Principles of Political Economy and Taxation*. Cambridge 1951.

ON GENERALIZING THE GENERAL THEORY

A Review Article

By ABBA P. LERNER*

Ever since Keynes' *General Theory of Employment Interest and Money* appeared in 1936, economists have been tempted to show that it is not quite so general and to fit it into a *really* general theory. The latest attempt, and the most grandiose, is one by Professor Sidney Weintraub [5].

The practical problem sparking Weintraub's work appears to be the very important one of sellers' inflation (although he does not use this term). While buyers' inflation is caused by too much spending, i.e., by buyers trying to buy more goods than are available and thereby bidding up prices, sellers' inflation is caused by sellers raising prices even in the face of a deficiency of spending. A failure to distinguish between the two types of inflation aggravates a problem which has become a serious threat to democratic society.

The appropriate treatment for buyers' inflation is to cut down the excessive spending that causes it. This may be done by a restrictive monetary or fiscal policy. But if restrictive monetary or fiscal policy is used against sellers' inflation, spending is reduced when it is *not* excessive, so that we get a deficiency of demand, depression and unemployment. The inflation will continue, however, unless the induced depression is severe enough to destroy the power of sellers to raise their prices. This may call for more depression than the authorities are prepared to impose or the public willing to suffer. We then get insufficient depression to stop the inflation and we suffer from both evils at the same time. In 1958 we seem to have had sufficient depression to stop the inflation, at least temporarily, but this remedy involved a loss of output estimated at some \$30 billion per annum and it severely reduced our rate of economic growth.

Galbraith has suggested [1, Ch. 13, 21] that we are rich enough to pay this price for price stability. But it is not simply a matter of a reduction in our standard of living; we are involved in a competition with communism for the planet. The failure to provide full employment is a serious handicap in this race. The loss of the \$30 billion may be responsible for a fatal economizing in our expenditure on defense. We have a good chance of winning the uncommitted nations to the democratic side by contributing a major share of the cost of a development program which could make their economic development relatively painless; but the loss of the \$30 billion may make us feel we cannot afford it. And the reduction in our rate of growth can make it relatively easy for the communists to realize their dream of "catching up with and surpassing" the U.S. economy.

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The immediate practical lesson of Weintraub's book is the futility of treating sellers' inflation with the measures appropriate for buyers' inflation, and his hopes of getting this lesson across are probably heightened by his feeling that he has stumbled on a revolutionary reformulation of economics. The flamboyant publishers' blurb, vying with the all-embracing title of the book, promises "A Sensational Break-Through for the Economics of Price Theory" and announces: "A New Conceptualization of Major Importance Finally Solves the Riddle of the Price Level and Wage Costs . . . Where Keynes' Theory Failed . . . A New Perspective . . . Makes Economics a Predictive Science." And this is modest in comparison with the chapter headings in the book itself.

One hesitates to put the pin to this bubble for fear of interrupting the salutary lesson on sellers' inflation, but it is important to show that Weintraub's revolutionary claims and the justifiable scepticism they engender do not diminish the validity of his lesson.

I. Weintraub's Model and His Proposals

Weintraub's starting point is the observed stability of the ratio of the value of the social product or output or income to the wage bill, which ratio he calls k or the "magic constant." This k is the same as Kalecki's degree of monopoly [5, p. 41], or Marx's rate of exploitation, or the ratio between the exponents in the Cobb-Douglas production function. The constancy has been widely observed. Keynes has referred to it as "a bit of a miracle"; and it is regularly used to show that Marx's prophecy of the "immiseration" of the workers cannot be rescued even by supposing it to refer to the relative share of the workers rather than their absolute income. But nobody has ever become as infatuated with this relationship as Weintraub or as fascinated with the tricks that can be played by combining it with the rules of arithmetic in exercises reminiscent of the game of "think of a number" or of H. G. Wells' attribution of the fascination of card games to people's not having learned to count properly up to 13.

The key trick is to transmute the value of the social output into the price level and the wage bill into the average wage by the appropriate multiplications or divisions. This yields a formula which has much in common with the equation of exchange of economic theory, but which is more useful because it deals with relationships that are much more stable. Unfortunately this is not too much of a recommendation, and unfortunately the new formula can confuse truisms with substantive statements just as much as the old one.

The basic relationship is:

$$(1) \quad Z = kW$$

where Z is the value of output, W is the wage bill and $k \equiv Z/W$.² Z is trans-

² "Think of a number, multiply by 2, add 10, divide by 2, subtract 5, and presto you have the number you started with!"

³ I am following Weintraub's notation except that I am keeping capital letters exclusively for observable quantities and lower-case letters for the relationships between these derived by the arithmetical operations, and I have renumbered the equations.

mutated into P , the price level, by dividing both sides of the equation by the quantity of output q ($\equiv Z/P$), while the average wage w ($\equiv W/N$, where N is the number of employees) appears in the formula because Weintraub always uses wN for W . We thus get [5, p. 9]:

$$(2) \quad \frac{Z}{q} = \frac{Z}{Z/P} = P = kwN/q.$$

Introducing output per employee, a ($\equiv q/N$), and substituting we get:

$$(3) \quad P = kw/a,$$

and introducing unit wage cost, r ($\equiv w/a$), and substituting we get:

$$(4) \quad P = kr.$$

The price level is k times the unit wage cost.

Equations (2), (3) and (4) are the main forms, and (3) the one most frequently used, of the Wage-Cost Mark-up equation (WCM) that Weintraub puts up against the equation of exchange (EOE) [5, p. 7]:

$$(5) \quad Mv = Pq; \text{ or } P = Mv/q$$

where M is the quantity of money and v ($\equiv Z/M$) is the velocity of circulation of money. His claim is that the use of truism (3) instead of truism (5) would turn economics onto the right path and transform it into a predictive science, because k is much more stable (and therefore also much more predictable) than v , w is more predictable than M , and a is much more predictable than q , so that the MCM equation would enable us to predict P more successfully.

Weintraub then goes on to derive an empirical value for k by dividing the Department of Commerce figures for business product (Z) by compensation of employees (W), and shows that between 1929 and 1957 k stayed between a high of 2.16 at the beginning of the period and a low of 1.87 at the end of the period [5, p. 14]. Indeed the figures show much greater stability still if we break up the period so as to separate out periods of war and of depression and to make some allowance for a downward trend.³

After deriving empirical values for the other variables in the WCM equations and hammering home the constancy of k by repeating the evidence in the form of index numbers and charts, Weintraub has an astonishing section [5, pp. 26-29] entitled "The Detection of the Price Level: Checking the Formula," in which he proves that between 1929 and 1957 the truism was almost

³From 1929 through 1941 k stayed between 2.16 and 2.13, except for the depression years 1930-1934 and 1937-1939, when it stayed between 2.11 and 2.07. Through the war years 1942-1945 it stayed between 2.02 and 2.08. In the 12 years of prosperity, 1946-1957, it shows a declining trend, keeping between 2.00 and 1.97 through the first half, 1946-1951, and between 1.94 and 1.87 in the second half, 1952-1957. As against a range for 1929-1957 of 15 per cent, the subperiods show ranges between 1½ and 3½ per cent.

exactly true! P' the price level computed from the annual figures for k , w , and a , is shown to be very close to P the "actual price level" (the implicit price deflator for business gross product). This is actually plotted on a chart [5, p. 28] where the closeness of the two curves must greatly impress the impressionable.

The "remarkable confluence" of P' and P is not perfect primarily because the computed w is not really w and computed a is not really a . Data for w or W/N are unattainable because there are no figures for N , the number of people engaged in producing the business gross product and earning W , so Weintraub uses substitute figures (which I will mark with a prime). These are total employment, N' , which includes employment in government enterprise, and the corresponding wage bill W' . From these we can get W'/N' or w' which is a good approximation to w . Similarly, computed a is obtained by dividing q not by N but by N' . We may call this a' and we therefore have:

$$(6) \quad P' = kw'/a';$$

and spelling this out in the capital letters used for the actual data we have:

$$(7) \quad P' = \frac{Z}{W} \cdot \frac{W}{N'} \cdot \frac{N'}{Z/P},$$

which reduces to:

$$(8) \quad P' = P \cdot \frac{W'}{W}.$$

The "remarkable confluence" of P' and P is nothing but the similarity of the index number of W' to that of W . Weintraub's recognition of this [5, p. 29, top] does not prevent him from expressing his elation at this "confluence" as a demonstration that "our method checks out" [5, p. 29, middle].

The next chapter (4) is entitled "The Law of k " and is devoted to stressing the constancy of k as "probably the most important economic law, in the true sense, that economists have to work with" [5, p. 33, in italics]. Greater and greater excitement is worked up by reducing k to index numbers, by making charts of k as well as of index numbers of k , by comparing it with more volatile series, by tabulating year-to-year changes in k , and by referring to similar phenomena at other times and in other countries. Weintraub expresses surprise at the high value of k in the depression years as compared to the 1950's [5, p. 36, where "1930's" is presumably a misprint for "1950's"], as well as at the postwar sag in k : "For this heaviness in k has traversed a period in which 'demand-pull' inflation has been widely described, an era in which consumer goods were in short supply, and a series of years in which a sellers' market has prevailed" [5, p. 42]. The main emphasis of this chapter however is not on the movements in k but on k being "perhaps as close as we are ever likely to come to finding a constant in the world of economic phenomena" [5, p. 43].

Chapter 5 is on "The Law of the Price Level" which is described as "an-

other interesting relationship," namely that "the price level will rise only if r rises" [5, p. 45]; and its introduction is celebrated by an impressive fanfare of tables, charts and correlations. But the law of the price level is *not* "another interesting relationship" at all. It is none other than the same k as it appears in equation (4), $P = kr$.

Chapter 6 "On Predicting the Price Level" describes how we can predict P ($=kw/a$) as accurately as we can predict k , w and a . If k is stable (or falls slowly at a known rate), if w is determined by known union policy, and if a grows at a known and steady rate, we are all set to predict P . Furthermore, Weintraub argues, if we want to know the effects on P of a particular wage increase, say in steel, we have only to figure how much this will increase the *average* wage in the whole economy and "magic constant" k will do the rest!

Chapter 7, "The Wedding Ceremony: Price Level and Aggregate Output," combines the four items of (3), P , k , w and a , with consumption, investment, interest rates, liquidity preference and money, the five items in the simplest Keynesian aggregate output model, to make a model with 9 equations and 9 unknowns. "Money enters into the model only through the interest rate" [5, p. 73] and can affect money wages (and therefore prices) only "through the effect on q and N " [5, p. 73]. Novelty is claimed for making the demand for money "dependent not only on real output but also on the level of prices" [5, p. 72].

Chapter 8, "The Eclipse of the Equation of Exchange," is primarily a renewal of the attack on EOE, this time with charts that dramatize k 's great stability in comparison with v , after quoting some rhapsodies on the stability of the latter by Milton Friedman. In this chapter Weintraub also attacks the "Strange Denial of a Wage-Price Spiral" by certain EOE theorists and insists that WCM is superior to EOE because changes in w influence P directly, while changes in M (even if they are successful in increasing total expenditures Mv or Z) affect P only indirectly through their effects on w .

Chapter 9, "A Miscast Federal Reserve," demonstrates briefly but very forcefully that the Federal Reserve Board, armed only with the power to vary the money supply, can check sellers' inflation only by bringing about severe unemployment. Weintraub goes on to argue that even this does not check inflation *in the long run*, because the retardation of investment by the induced depression must raise P because it slows down a , the increase in output per man, and as we have seen:

$$(3) \quad P = kw/a$$

In Chapter 10, "Wage Policy: A Way Out," Weintraub rejects any kind of regulation of wages or prices and proposes "watch-tower control" by research agencies publishing their findings as to the probable effects of projected wage increases on w , the average wage level, and so on P . He believes that such appeals to reason will work because when union leaders realize that k is constant they "can never again evade price level responsibility for any immoderate wage change exactions" [5, p. 92].

The rest of the book is devoted to refining k and developing the predictive

application of the new theory. Chapter 11, "Decomposing k " deals with the nonwage part of total output or income (which is equal to $k - 1$ times employee compensation), breaks this down into 8 segments and calculates the ratio of each of these segments to employee compensation for each year from 1929 to 1957. Weintraub then goes into ecstasies over the stabilities uncovered by the analysis, or resulting from "small numbers being compared to large" [5, p. 102], or created by the rounding of small ratios to the nearest percentage point, or appearing in the later part of the series. For example, net interest originating in business as a ratio of employee compensation ranges from .18 to .02 (so that the maximum is 900 per cent of the minimum). But from 1944 to 1957 it stays at .02 or .03 and Weintraub exclaims, "Can a series possibly hold more firmly than this?" [5, p. 95], although the rounding may conceal a range within this stable period reaching almost from $1\frac{1}{2}$ to $3\frac{1}{2}$ per cent with the top of the range 233 per cent of the bottom. Nevertheless, despite the nature of parts to be less stable than their sum, information about how they are expected to behave could improve estimates of k .

Chapter 12, "An Empirical Macroeconomic Theory of Income Distribution," although announced as "large steps toward" this, turns out to be nothing but the reconstitution of $k - 1$ from the parts into which it is split up in Chapter 11. Chapter 13 "A Final Price Level Generalization" is a repetition of the observation that k is about 2, so that if P can be expected to stay around twice r (the unit wage cost), P will fall 2 cents for every 1 cent fall in r . We are told that: "This is a result never reached or even suggested by the EOE. It indicates the wide range and deep penetrative power of the WCM-formulation" [5, p. 110].

This however is not yet the climax. The last chapter "The Price Level Over Time: The Final Synthesis for a Growing Economy" provides a still higher power of the "think of a number" game. Here Weintraub combines:

$$(3) \quad P = kw/a$$

with a growth truism taken from Harrod:

$$(9) \quad g = s/c$$

where g ($\equiv \Delta q/q$) is the rate of growth of output or increase-in-output per (unit of) output, s ($\equiv S/Z$) is the saving ratio, S standing for absolute money saving, and c ($\equiv i/\Delta q$) is the marginal capital-output ratio, i ($\equiv S/P$) standing for real saving or real investment or marginal capital.

Harrod's truism says that the rate of growth is equal to the saving ratio divided by the marginal capital-output ratio. It is true because the saving ratio divided by the marginal capital-output ratio means saving (or investment) over income (or output) divided by investment (or saving) over the increase in output. The saving (or investment) cancels the investment (or saving) so that we are left with "over output" divided by "over the increase in output," and this is only an unusual way of saying "increase in output divided by output," which is the definition of the rate of growth. In symbols:

$$s \equiv S/Z = \frac{S/P}{Z/P} = i/q \quad \text{and} \quad c \equiv i/\Delta q,$$

so that:

$$(9) \quad s/c = \frac{i/q}{i/\Delta q} = \frac{1/q}{1/\Delta q} = \Delta q/q \equiv g.$$

This is all right as long as we remember that the marginal capital-output ratio c is *not* the marginal efficiency of investment and does *not* mean that an additional \$ c saved and invested would result in an additional \$1 of output per annum. The truism says no more than that, in the period observed, investment was c times the increase in output. The increase in output was due not only to the investment but also to increase in population, increase in skill, increase in technical and scientific knowledge, discovery of new resources, depletion of old resources, and acts of God like the size of the harvest or changes in the terms of trade or the behavior of the Board of Governors of the Federal Reserve System. It is very hard to remember all this all the time and that is why capital-output ratios and truisms like Harrod's are even more conducive to error than the EOE.

So far Weintraub's guilt is only by association, but in combining (3) with (9) Weintraub [5, p. 112] arrives at:

$$(10) \quad p = kw \cdot \frac{s}{c\Delta q/N}$$

and substituting b ($\equiv \Delta q/N$, the increase-in-output per man),⁴ he achieves [5, pp. 113-14]:

$$(11) \quad P = kw \frac{s}{cb}, \text{ or:}$$

$$(12) \quad P = kw \frac{g}{b},$$

"the final synthesis between the price level and the phenomena that are responsible for economic growth" [5, p. 113].

What these formulae tell us is that instead of saying "output per man" we can say "increase-in-output per man divided by increase-in-output per (unit of) output" because the "increase-in-output"'s cancel out leaving us with "per man" divided by "per (unit of) output" which means output per man.

⁴ It must be noted that b is the increase-in-output per man and not the increase in output-per-man as is suggested by Weintraub's "per employee output growth rate" [5, pp. 112-13]. These two are equal only if N , the number of men, does not change. If q and N both increased by say 10 per cent, increase-in-output per man is 9 or 10 per cent, depending on whether we take the final or the initial N , while there is no increase in output-per-man.

In symbols this means that in the WCM equation:

$$(3) \quad P = kw/a,$$

instead of writing a , which stands for output per man or q/N , we can write $\frac{\Delta q/N}{\Delta q/q}$, because the Δq 's cancel out leaving us with $\frac{1/N}{1/q} = q/N \equiv a$. If we do this we get:

$$(13) \quad P = kw \cdot \frac{\Delta q/q}{\Delta q/N}.$$

If we now write g (increase in output per unit of output) for $\Delta q/q$ and b (increase in output per man) for $\Delta q/N$, we get:

$$(12) \quad P = kw \cdot \frac{g}{b}.$$

If, in accordance with equation (9), we write s/c for g we get:

$$(11) \quad P = kw \cdot \frac{s}{cb},$$

and if we now restore $\Delta q/N$ for b we get:

$$(10) \quad P = kw \cdot \frac{s}{c \Delta q/N}.$$

It is possible to do the same trick with "investment" as with "increase-in-output." Thus instead of output per man we can say investment per man divided by investment per unit of output. Instead of a (or q/N) we can write $\frac{i/N}{i/q}$. Weintraub does just this and [5, p. 115] comes out with:

$$(14) \quad P = kw \cdot \frac{i/q}{i/N}.$$

In exactly the same manner we could say horsepower per man divided by horsepower per unit of output, or the number of filter-tip cigarettes per man divided by the number of filter-tip cigarettes per unit of output. All of these are only queer ways of saying output per man; and the queerer the irrelevant (canceling) items the less the danger of forgetting its irrelevance and supposing that the equation "conveys some new information" [5, p. 115]. But "increase-in-output" is not sufficiently queer to make its irrelevance apparent, so that it leads Weintraub to suppose that the statement "So long as equipment per head grows faster than equipment per unit of output . . ." [5, p. 115] means something more than "So long as output per head increases. . ."

In an arithmetical example of "the predictive application" of the final synthesis, Weintraub uses language that might be interpreted as assuming that c , the marginal capital-output ratio, is indeed the marginal efficiency of investment,⁶ but this does not touch the validity of his conclusions because the i 's (real saving or real investment or marginal capital) cancel out and the Δq 's (increases-in-output) also cancel out, so that c , which $\equiv i/\Delta q$, also cancels out.

In equations (10), (11), (12), (13), and (14) we have five different expressions, each in turn taking the place of the last item in equation (3)— $1/a$ and all meaning exactly the same—men per (unit of) output or the inverse of output per man. If output per man (a) is constant (in which case $1/a$ and all its synonyms will be constant too), P will vary with w , growth or no growth. If we put some growth elements into the equation, sound or unsound, and then take them out again we will always be left with the relationship we started with.

Some even more fanciful developments of this game, breaking up b , the increase-in-output per man, into investment and consumption, lead to "profound implications which are significant for economic development" [5, p. 118], such as that "high savings are thus capable of raising future real wages" [5, p. 117]. Reference in connection with this is made however not to Adam Smith or even to Ricardo, but to some puzzling propositions in Joan Robinson's *Accumulation of Capital* [5, p. 118n].

II. Evaluation

Notwithstanding all these extravagances, Weintraub has his finger on a matter of the utmost practical importance—the need for anti-inflationary measures more acceptable than bleeding the economy with depression. It will be a pity if this valuable insight should fail to help develop such measures either because of the extreme conservatism of his practical proposals or because of the rather revolutionary claims in which the theoretical analysis is wrapped. Yet, it is necessary, having recognized the value and validity of the insight, to evaluate both the practical proposals and the economic-theoretical claims.

1. The practical proposals for checking inflation without resorting to depression to keep wages and prices from rising are most disappointing. Although his analysis concentrates (or even overconcentrates) on the wage rate as the crucial element that forces prices up, and although he observes that exhortation "blows quick and wears short" [5, p. 89], Weintraub pins his faith on giving publicity to estimated effects of proposed wage increases on the price level. But union leaders, rather than accepting responsibility for the effects wage increases have on the price level and endeavoring to practice restraint, may just as well turn the edge of the "magic constant," charging the monopolists with increasing P and blaming the implacable k for the inevitable increase in w forced on helpless union leaders who cannot buck the Law of k ! At any rate it seems more than likely that particular prices will continue to be raised by businesses and that particular wages will continue to be raised by

⁶"Suppose that the amount of equipment needed to produce one unit of output—or \$1 worth—is \$5" [5, p. 113].

unions, neither the former nor the latter being ready to sacrifice particular interests for the sake of relatively small effects on abstractions like the general price level or the average wage level.

Furthermore, even if "watch-tower control" [5, p. 89] should indeed be effective in checking particular wage and price increases that threatened to raise the general price level (i.e., if businessmen and union leaders were persuaded to sacrifice their particular interests for the sake of the general good or for the sake of public applause) this would disrupt the proper price relationships since it would not provide for the relative movements of prices that are necessary in an economy subject to change.

2. The claim that changes in M or Mv can affect P only indirectly through the effect on w , amounts to a denial of the possibility of buyers' inflation. In this Weintraub is just as one-sided as those who deny the possibility of a wage-price spiral generated on the supply side by sellers.

3. Weintraub's proposals are all for stabilizing P by preventing w from rising more rapidly than a and never for holding down w by checking increases in P . This is a consequence of his one-sidedly seeing k as operating only from w to P and never from P to w . But the Law of k is perfectly symmetrical between w and P , and is no better for predicting P from w than for predicting w from P . If there is no excess demand and we know that w will rise in a certain manner, the Law of k tells us that P will rise proportionately. But if excess demand is bidding up P , the Law of k tells us that w will move up proportionately. They may both be pulled up by the market force of excess demand or pulled down by the market force of insufficient demand. Or they may both be pushed up administratively by powerful sellers, or pushed down administratively by powerful buyers. And yet all the time they stay in the same proportion k , so that if we know what will happen to either one of them, we can figure out what will happen to the other. The problem is to predict how *both* will move while held together in the stable relationship k or $1/k$.

4. One wonders why Weintraub should be surprised at k being lower in 1930-34 than in the years immediately before and after, or at the postwar decline in k . A lower k should be expected in depressions because profits fall more in depression than wages do. And it is natural that a long period of continuing prosperity should reduce k .⁶ Prosperity makes entrepreneurs more optimistic, so that they push forward their break-even point and lower their mark-up; it increases their readiness to expand and compete; and it lessens the degree of monopoly and the "rate of exploitation" by reducing the reserve army of unemployed workers. (All of these expressions are after all nothing but different jargon for a reduction in k .)

While the *expectation* of continuing prosperity has the effect of gradually lowering k by lowering the *planned* mark-up, an *actual* depression or recession also lowers k , though it does this suddenly by an unplanned fall in profits. However, it also strengthens the expectation of depressions as part of the natural order of good and bad years, and this has the opposite effect, raising

⁶But if the bad times should not be expected to come, the continued high, boom time profits being made would tempt more competition to come in and participate. This increase in competition would result in lower rates of price markup" [2, p. 179].

k . On these grounds I would predict that the (engineered) interruption of prosperity by the depression of 1958, by upsetting expectations of continuing prosperity, will have the effect of reversing the trend and increasing k in 1959 and 1960.

5. There is no novelty in making the demand for liquidity depend on the price level. Keynes did not need to make this explicit because it is clearly implicit in his measuring everything in terms of the wage unit instead of the dollar. Indeed the only purpose of this rather troublesome procedure was to take care of the need for more dollars when prices and wages are higher.

6. The stability of k is an essential ingredient of the whole Keynesian revolution. It alone makes it possible for the wage unit to be used as a kind of index number of prices. In an early popularization of Keynes' *General Theory* I spelled out why a change in w (in the short run in which a is given) would lead to a *proportional* change in P [3, esp. pp. 116-20].

7. Weintraub's well-taken and important criticism of the futility of treating sellers' inflation by a restrictive Federal Reserve *monetary* policy, fails to point out that the alternative that comes to mind immediately—a restrictive *fiscal* policy (which reduces v rather than M)—is subject to exactly the same criticisms. This gap is another indicator of the way Weintraub is often really thinking of the falsity of the quantity theory of money while criticizing the irrelevance of the equation of exchange.

8. There seems to be an unresolved conflict between the academic and the trade titles of the book. The academic title is concerned with a theory that would lead to appropriate governmental or social *policy*, in particular for dealing with sellers' inflation when a restrictive monetary policy is futile or harmful and when P can be controlled only through w . Weintraub recognizes that monetary policy is under the control of the authorities while wage policy is not, and attempts to deal with this in his proposals for "watch-tower control." But the trade title emphasizes *forecasting* and declares that M (monetary policy) is harder to forecast than w (wage policy). Here the policy problem of regulating, controlling, or influencing w seems to have been abandoned or forgotten in favor of the forecasting problem of guessing what the government and everyone else will do or fail to do. A more careful working out is needed of the relationship between the internal problem of telling the government what to do and the external problem of guessing what in fact will happen.

9. The "trade" assumption that the course of w is *given*, in combination with the assumption that the direction of influence is always from w to P and never from P to w , leads Weintraub to argue that a demand or buyers' inflation would be recognized by an increase in k , and if that is not observed we cannot be said to have a buyers' inflation [5, p. 72n]. But if w *can* increase in response to an increase in P , observation of the behavior of k tells us nothing as to whether any inflation is a buyers' or a sellers' inflation.

10. Weintraub argues that even if a sellers' inflation is checked in the short run by an engineered depression, this only aggravates inflation in the long run because the set-back to investment reduces the growth of a , output per man. This argument implies that the time-shape of w is unaffected by the depres-

sion—which is contrary to the assumption that the depression is sufficient to check the inflation in the short run.

The argument is not really needed since the damage done by loss of output is reason enough for not using depression as the treatment for sellers' inflation. It is, however, possible to salvage two less drastic but still significant results: (a) If a , the increase-in-output per employee has been, and is expected to remain at, 2 per cent per annum it may require a 6 per cent level of unemployment to provide price stability by keeping w from rising at no more than 2 per cent. But if depression, by checking investment, reduces a below 2 per cent, it will take more unemployment to stop the inflation. w can no longer be permitted to rise at 2 per cent and unemployment must be increased to 7 per cent if that is the unemployment needed to stop w from rising relatively to a . The reduction in the increase in a necessitates a more severe depression to stop the inflation. (b) If the induced depression reduces a by more than it reduces w it will raise unit costs and aggravate the inflation even in the short run. If the effects on w are rapid while the effects on a are slow (which may be the case because the latter are cumulative results of the diminished rate of investment), the depression may be anti-inflationary in the short period but inflationary in the longer period. This is a truly dynamic effect and it may be what Weintraub has in mind, but he does not make it clear that it depends on the continuing depression reducing a by more than it reduces w .

11. Weintraub claims that his WCM approach integrates the microeconomics of the firm with the macroeconomics of the economy as a whole by applying to the latter the principle of the unit wage cost mark-up that determines the price of the product of the individual firm. This can be very misleading because the unit wage cost mark-up of the firm, k' , is very different from k (or Z/W), when production is split into a series of stages operated by different firms. In general k' will be very much larger than k because direct wages are only a part of the cost. On the other hand the unit *total* cost mark-up of the firm will in general be much less than k since it covers only one element in $k - 1$, namely the profits of the firm. The difference between the individual firm's mark-up and k is only another aspect of the unclosed gap between micro- and macroeconomics.

12. Weintraub's "wedding" of the theory of the price level to the theory of aggregate output is a kind of "silver wedding" or the marriage of a long-wedded couple; but it carries with it a nuptial air because of a mistaken identity. The wedding that economists have been looking forward to for a very long time is between the theory of the determination of the *general* or *absolute* price level and the theory of the determination of *particular* or *relative* prices. The analysis of the general or absolute price level has been integrated with the analysis of aggregate output ever since the Keynesian revolution, and both are part of macroeconomics. The analysis of particular or relative prices has been inseparable from the analysis of the output of the firm or the industry for a much longer period and both are part of microeconomics. The union we are still waiting for is one between micro- and macroeconomics, and not one between the price and output aspects of macroeconomics. That is now in its third decade.

III. *Another Approach to a General Theory*

In my own attempts to generalize Keynes—and nobody seems to be immune from this ambition—I have been led to believe that instead of arranging a marriage by combining macroeconomics and microeconomics in a single set of equations, it would be more fruitful to heed Marshall's warning that *natura non facit saltum* and to see whether "macro" and "micro" cannot be treated as limiting cases at the extremes of a continuum or spectrum. This is the way in which competition and monopoly have been brought into relation with each other. Long-term and short-term analysis are also best bridged in such a manner. There is plenty of precedent; and indeed it is just because such continuity can be utilized throughout economics that Marshall was led to his motto.

To be able to use this method one needs a measure by which one can locate the place of the observed phenomenon in the continuum. In the case of the competition-monopoly spectrum, for example, we may use the "degree of monopoly," or we may use the inverse of the elasticity of demand, but the more general measure is the degree to which one may safely neglect repercussions. A small seller in a large market may neglect the effect of his sales on the market price; this is perfect competition. The larger the seller in relation to the market the less defensible is such neglect, and so we pass through various degrees of imperfect competition to monopoly as some undefined limit. Going in a slightly different direction we observe that a small seller in a large market can disregard the reaction of his competitors to his price policy. The larger he is in relation to the market the more must he take into consideration the reaction of his competitors; and in the interweaving of his policy with the expected policies of his rivals we have the strategies of oligopoly. We may continue further along the same line and consider that when the seller is not only very large in relation to a particular market but of importance for the economy as a whole, he must take into account not only the reactions of competitors but those of other groups in the economy, his suppliers or his customers, who may find it worth while to organize a "countervailing power" against him. Beyond that, a powerful seller must take into account the reaction of the government, and we find ourselves gliding from economics through political economy into the realm of politics.

In the same way a small buyer may neglect the effects on *income* of his decisions to spend or not to spend. Although someone else's income must be reduced by a dollar when he spends a dollar less, he is not concerned with this. It will have no discernible effect on his own income. But as the buyer, or the group of buyers we are considering, becomes larger in relation to the economy, it becomes less and less appropriate to neglect the repercussion on income, because spending by the members of the group will significantly consist of purchases from other members of the same group. If the group consists of a quarter of the economy, then, in the absence of some special information that tells us otherwise, we would expect about a quarter of the spending to consist of buying from other members of the group. If the group wants to increase its saving by a dollar and expects to achieve this by consuming a dollar less, it will be disappointed. Its income will fall by a quarter

so that its saving will increase by only 75 cents. If a group consisting of half of the economy tries to save a dollar by consuming a dollar less, it will find itself saving only 50 cents. And finally, if we take the group that is the economy as a whole, we find that when it spends a dollar less, its income falls by the whole dollar and there is no increase in saving at all. The repercussion which could be entirely neglected for a small seller has now, in the other limiting case, become absolute. This is because there is now nobody else to absorb any part of the repercussion.

It is the inability of many to pay attention to the repercussions that leads them to balk at the bridge from "micro" to "macro" and to insist on the "self-evidence" of the proposition that a cut in prices would cure a depression, because a cut in the price charged by a small seller increases his sales. Such crude anti-Keynesianism is rescued by a more sophisticated and more valid argument in terms of the effect of price reductions on the value of cash balances. It is here that a more careful examination of a spectrum of price flexibility can clarify the issues even if the result is not exactly a wedding between Keynesian and classical positions, but merely their location on a spectrum that goes farther than these positions in both directions.

If there were perfect price flexibility, so that any deficiency in demand would make prices fall so rapidly and excess demand would make prices rise so rapidly that we would not have to worry about what happens while the adjustment is going on, there would be no room for "Keynesian economics," or indeed for any policy at all with regard to effective demand. No policy would be necessary to prevent depression as long as there were some floor under the supply of hard money in existence; and no policy would be necessary to prevent inflation as long as the quantity of money did not increase indefinitely. Any excess of demand would be cured by the reduction in the real value of the money stock as prices rose. Any deficiency of demand would be cured by the increase in the real value of the money stock as prices fell.

Policy is necessary because we do not have, and never can have, this kind of price flexibility. This is why those economists, like Pigou and Patinkin, who have explored the way in which perfect flexibility would work, have been careful to point out that they are not recommending reliance on price flexibility, or even on any available measures for increasing price flexibility, as an adequate public policy. With different degrees of imperfection in price flexibility different policies become appropriate, and it is these differences in the supposed position of the economy on a spectrum of price flexibility that explain the different policy recommendations rather than any subjective attachments of economists to different philosophies.

If there is imperfect flexibility downward of prices, the cure of a deficiency of demand by price deflation involves a protracted period of depression aggravated by continuing expectations of further reduction in prices which are still resisting the downward pressures. It then becomes appropriate to bring about the increase in the real value of the money stock by less painful methods, namely by increasing the money stock in nominal terms. The mechanism of recovery and the attainment of equilibrium and price stability then proceeds in exactly the same way as if the increase in the real value of the money stock

had come about without benefit of policy—namely through perfect price flexibility. This is the Keynesian general case of an increase in the money stock—in terms of “wage units” so as to include the case where it is brought about by deflation.

The next position on our spectrum is where the inflexibility has invaded the money market and the rate of interest fails to fall in response to the increase in the real value of cash balances (the Keynesian special case with the liquidity trap) or where investment and consumption fail to increase in response to a fall in the rate of interest. The secondary inflexibilities would not matter if prices in general were perfectly flexible, since an unlimited fall in prices would constitute an unlimited increase in the wealth of the owners of the cash and this would induce the necessary increase in spending anyway. In the absence of unlimited price flexibility, the same cure could be obtained by an unlimited increase in the nominal quantity of money. But where this is unpractical (and even where it might be practical) resort to a more direct method of increasing demand might still be desirable. The government can increase its own spending or induce more spending by others by reducing taxes (or use a combination of these measures, including a larger budget with its net positive effect on total spending). If monetary policy is inadequate it can be supplemented by fiscal policy.

Farther along the same spectrum we have the situation where prices not only refuse to fall when there is a deficiency of demand, but tend to *rise* if there is a level of demand that provides a satisfactory level of employment. Prices will then be stable only if there is considerable unemployment. In the absence of this degree of depression, wages and prices will be rising in a sellers' inflation, with labor blaming the wage increases on price increases, and business blaming the price increases on wage increases.

In this case, monetary and fiscal policy cannot provide full employment with price stability. If monetary and fiscal policy is applied so as to achieve price stability, it causes depression. If it is directed at achieving full employment, it causes inflation. Full employment together with price stability can be attained now only by providing an artificial market to replace the missing competitive market that would have prevented such price behavior. The administered prices and wages that rise as soon as unemployment is less than, say, 6 per cent (when 2 or 3 per cent is all that the genuine frictions make necessary) must be so administered, in the general interest, that the general price level is constant as long as there is no excess demand. Such price regulation, like the regulation of the prices charged by public utilities, would not be interfering with the free market. It would rather be interfering with the *interferences* with that administration of prices which destroys the free market and makes sellers' inflation possible. Sellers' inflation does not fit into the Keynesian scheme any more than into the classical scheme, because Keynes, like the “classical” economists, assumed that although prices might be reluctant to fall in spite of unemployment, they would not rise unless there was excess demand. Sellers' inflation is possible because prices are raised even at less than full employment as long as the unemployment is not severe enough to hamstring the price and wage administrators.

Another and closely related spectrum may be envisaged in the degree to which money is incorporated in models of the economy. At one end of this spectrum is the barter economy where monetary complications are absent. Moving along the spectrum, we come to models where money is spoken of but not brought into close relationship with the "real" economy, and money is supposed to affect only the absolute level of prices; the relations between prices, including the rate of interest, are determined in the barter department. Here the rate of interest stands for either the marginal efficiency of capital (when stationary states are considered) or the marginal efficiency of investment (where growth and decay are permitted to enter the analysis). Farther along the spectrum are models where changes in the quantity of money are not immediately sterilized by changes in the price level, because price flexibility is less than perfect, so that employment is not always full. This is the Keynesian analysis (including the modern anti-Keynesians) that stresses real-balance effects. Still farther along the spectrum is the region I would like to explore, where money is *completely* integrated in the model, where the enjoyment of liquidity is not considered any different from the enjoyment of any other good or service, and where the cash balance is perfectly at home with all other assets yielding liquidity as part of the income flow while constituting part of the assets of the household, just as houses yield house-room as part of the income flow while constituting a part of the assets of the household. It then becomes unnecessary to bring in real-balance effects as a complicating afterthought and it is much easier to deal with the problems of price levels and employment. In such models it would be convenient to speak of wealth as a vector containing both assets and income, so that an increase in either, the other being constant (as when there is a change in the rate of interest) would constitute an increase in wealth.

Perhaps a more interesting spectrum would be that of the degrees of equilibrium. This might dispose of the tiresome arguments as to whether unemployment equilibrium is not a contradiction in terms. Here we might start with the most equilibrial kind of equilibrium, where there is no excess or deficiency of demand whatever that might sooner or later result in some change in the price even with perfect price flexibility. Such an equilibrium by definition rules out any involuntary unemployment.

Farther along the spectrum we find an equilibrium in which there is involuntary unemployment and it does not disappear—either because there is a rigidity of wages and prices so that the situation is frozen, or because prices and wages are both falling so that there is no incentive for employment to be increased. This may be because the increase in the real value of the money unit is being canceled by decreases in the supply of nominal cash or is being offset by increases in the desire to hold cash, so that the rate of interest does not fall; or because investment and consumption are unresponsive to the rate of interest, while the effects of the increase in the real value of the money stock on the propensity to consume (the Pigou effect) is small in the period we are considering. This is the Keynesian unemployment equilibrium. Any increase in output would result in losses that would push output back to the previous level.

In describing this equilibrium, Keynes tells us that while he has rejected the classical postulate that the wage is equal to the marginal disutility of work, he still maintains the other classical postulate that the wage is equal to the value of the marginal product. (We may extend this to include imperfect competition by changing this to say that the marginal cost of labor is equal to the marginal value product of labor). Workers would be happy to do more work at the same rate of pay, so that labor is off its supply function. This is why this equilibrium is not as equilibrated as the first one on this spectrum. Nevertheless we are justified in calling it an equilibrium because there is a certain stability about the situation. Keynes opened himself unnecessarily to criticism by supposing that an increase in employment would necessarily lead to a fall in real wages (though he later recognized that this was not essential to his model) saying that labor was not in a position to reduce the real wage,

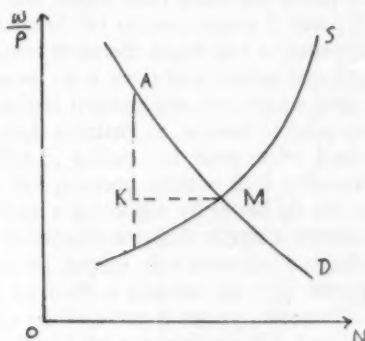


FIGURE 1

because a reduction in the money wage makes prices fall proportionately so that the real wage stayed the same. What is relevant is not the inability of labor to reduce the real wage but its inability to bring about an increase in demand which increases employment—whether this would lower the real wage or raise it.

We can deal with this better if we move farther along the spectrum to an even less equilibrated equilibrium, which is at the same time closer to the realities of a depression. At this point on the spectrum, the *second* classical postulate is rejected,¹ namely that the wage is equal to the marginal product of labor (or the marginal cost of labor is equal to its marginal value product).

In a depression business is no less eager to sell more products at the current price than labor is eager to do more work at the same wage. In Figure 1 (following Patinkin) the actual situation is represented by the point K. The S curve shows how much labor would be supplied at various real wage rates (w/p is the wage-price ratio— w is the wage and p is the price level). The D curve shows how much labor the employers would demand if they could sell

¹ This is done by Patinkin referring to a suggestion by Liviatan [4, p. 218 ff] but Patinkin seems to underestimate the importance of his and Liviatan's innovation.

the corresponding amount of product at each wage-price ratio. But they are unable to sell that much product so they only demand the quantity of labor indicated by K . Full equilibrium with full employment would be at M where workers would find all the work they want and employers would sell all the goods they want to sell at the prevailing wage-price ratio. Since K is off both curves it shows that *neither* of the classical postulates holds. If we were to follow Keynes and reject only the equality between the wage and the marginal disutility of work, we would be at A , and the real wage would be higher than at full employment. If we rejected both postulates we might argue, as Patinkin does, that, starting at M , a fall in demand would result not only in involuntary unemployment (we would be off the supply curve) but also in business depression (we would be off the demand curve too), and both wages and prices would fall. If they both fell at the same rate, we would be at K , with the same real wages as at M . If prices fell faster than wages, real wages would rise and we would be above K ; and if wages were to fall faster than prices we would be below K . What happened to real wages therefore would depend on the relative flexibility of wages and prices; and there is no necessity for the negative relationship between real wages and employment indicated by Keynes.

There is however no need to assume, as Patinkin does, that at any point to the left of M wages and prices must be tending to *fall*. This assumption is itself the result of declaring a dichotomy between full employment and unemployment when we can do better by supposing a spectrum. If we succumb to the temptation to assume a simple dichotomy between pure unemployment, when an increase in demand increases only output, prices staying unchanged, and pure full employment when an increase in demand increases only prices, because output cannot increase, we get a curve of the supply price of output in relation to the wage level that consists of a left-handed L , as in Figure 2—a horizontal line AF showing a constant supply price up to full employment at F when the curve suddenly becomes vertical. No matter how high the price goes (relatively to the wage) the quantity supplied cannot be increased. (The vertical measure in this diagram is the *inverse* of the real wage, which is measured vertically in Figure 1. It is p/w instead of w/p .)

This curve can also be read as showing (the inverse of) the real wage for any level of employment. Up to full employment the real wage is constant. At full employment the real wage is indefinite, depending on how the race goes between rising prices and rising wages in the inflation. Where one would be on the curve would depend on what business is able to sell as determined by the state of business or over-all demand.

With this model one is tempted to identify full employment with price stability because the corner point, F , seems to indicate both. If demand increases above F output cannot increase but prices rise. There will then be abnormal profits and a competitive increase in the demand for labor. Wages will be bid up until the same real wage is restored and the demand curve once more passes through F . If demand decreases there is a reduction in output but the price-wage ratio is unchanged. There are now unemployed workers, business is slack, and there is pressure on wages and prices to fall. If prices and

wages fall rapidly without limit, demand will increase and the demand curve will rise until it cuts at F again. If wages and prices are sticky, or if they fall but it takes a long time before the resulting increase in the value of the money stock raises demand so as to restore full employment, we have underemployment equilibrium. This, however, is temporary, even though it may be temporary for a very long time if nothing else is done about it. We still have prices rising whenever the demand is above F and prices falling or tending to fall whenever the demand falls below F . F therefore seems to represent both full employment and price-level equilibrium.

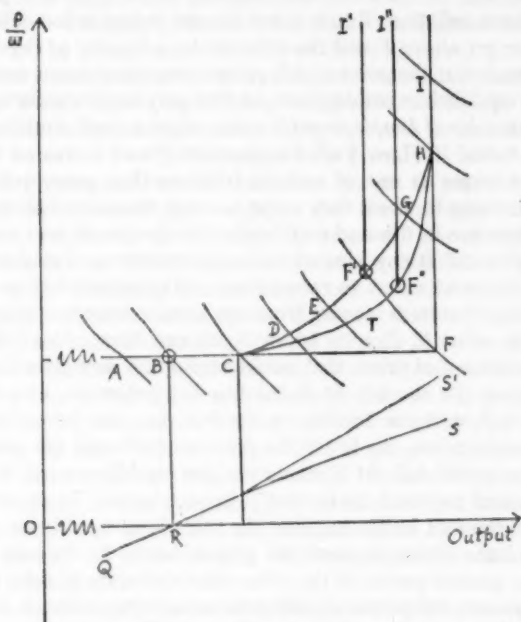


FIGURE 2

But this need not be the case at all. It is quite possible to have less than full employment—to be on the horizontal arm of the supply curve—and for prices and wages to be rising. Of course this cannot be due to excess demand. The increase in prices and in wages cannot be a market response. It can occur only if prices and wages are being pushed up administratively by sellers. We then have a sellers' inflation. Buyers' inflation can be cured only by removing the excess demand that causes it. Sellers' inflation can be cured only by measures that remove the power of sellers to raise prices. Reducing the level of demand may do this, but only by creating a depression severe enough to break down the administrative power of sellers to push up their prices. If we do not want to suffer this degree of depression, which may be quite severe, we must

either continue to suffer from the inflation or we must clip the power of sellers by other means—namely by a regulation of administered prices so as to make these behave the way they would in a competitive market.

As long as sellers retain the power to raise prices administratively, we can mark off on the horizontal arm of the supply curve the point *B* where the degree of unemployment and depression is just sufficient to check sellers' ability or willingness to raise prices. This is the level of employment at which wages rise no more rapidly than productivity so that we have price-level equilibrium. We may call it *price-level equilibrium employment*. To the left of *B* prices will fall and we will have deflation, and to the right of *B* prices will rise and we will have inflation. But it is not buyers' inflation but sellers' inflation. Only when we get above *F* will the inflation be a buyers' or demand inflation. Keynes assumed that the point of full employment is also necessarily the point of price-level equilibrium employment, so that only buyers' inflation is possible.

In my *Economics of Employment* I spoke of price-level equilibrium employment, but I called it "Low Full Employment," and I treated the power of labor to raise wages as one of various frictions that prevented unemployed factors from moving to where they could be used. Because of all these frictions, any further increase in demand could only raise prices. It now seems to me to be misleading to call *B* any kind of full employment; and misleading to lump together the power of sellers to raise prices and genuine frictions that prevent factors of production from moving from one area or one occupation to another.

Through the point *R*, directly below *B*, we can draw a line *QRS* indicating the rate of movement of prices that would accompany any given level of output and employment. To the left of *R* the line lies below the axis showing that prices would fall, and the further to the left, i.e., the lower the volume of output and employment, the lower the point on *QRS* and the greater the rate at which prices would fall. At *R* wages rise just rapidly enough to balance the rate of increase of productivity so that prices are stable. To the right of *R* the line lies above the axis indicating that the price level would rise, and that the greater the volume of employment the greater would be the rate of price rise because of the greater power of the price administrators to raise prices. At *F*, or full employment, the power of sellers to raise prices becomes irrelevant because beyond this point there is excess demand. The market itself then raises prices whether there exists any administrative power to raise them or not. Sellers' inflation then bows out of the picture and buyers' inflation takes over.*

A closer look blurs this clear distinction between sellers' inflation and buyers' inflation. Full employment is not reached suddenly; it also is a matter of degree. As we move up the level of employment, long before resources everywhere are fully utilized we will come across bottlenecks and increasing marginal costs as capacity is approached.

* If any level of employment other than *R* persists for some time, the rate of change of prices (whether upwards or downwards) comes to be anticipated, the movement is accelerated, and the rate of price rise or of price fall will be greater. The line *QRS* would swing round *R* in an anticlockwise direction, becoming steeper in the process. The longer the movement persists the steeper will the curve become and the inflation or deflation will develop into hyperinflation or hyperdeflation.

If we were to consider the increase in employment as requiring the application of increasing quantities of labor to a given supply of capital, we might expect to find increasing marginal cost almost from the beginning of the curve, but this would be so only if we were considering a very long run in which capital was properly adjusted for permanent operation with each volume of employment measured along the horizontal axis. If, on the other hand, we were concerned with short-run problems of output and employment varying with an industrial equipment designed for some normal level of employment of the current labor force, then the supply curve would be fairly horizontal for some time before we got into problems of crowding the capacity. We would then have a curve of supply price like that marked in Figure 2 by the alphabet from *A* to *I* at the points where a series of demand curves cut it.

As before, *B* is the point of price-level equilibrium employment, with wages rising no faster than can be matched by rising productivity. At *C* there would be a pure sellers' inflation with prices rising at a rate indicated by the height of the *QRS* curve above the horizontal axis directly below *C*. But now we have increasing costs and bottlenecks before we get to perfectly full employment; and prices rise more than wages, so that the real wage falls as we move along the supply curve up the alphabet. If wages did not change at all, prices would rise as shown by this curve and real wages would fall in that proportion. We now have an additional reason why wages would rise: Not only is the bargaining power of labor raised by the higher level of employment, the pressure for wage increases is intensified by the attempt to make up at least what is lost in real wages by the price rise, and the resistance to wage increases is diminished by the feeling that workers have just cause for complaint. This is indicated by the replacement of *RS* by *RS'* with a greater rate of wage and price increase for each level of output and employment above *C*. At some point, say *F'*, the combined pressure for wage increase becomes so great that any further increase in employment is prevented. A further increase in demand would make wages rise as rapidly as prices, so that p/w would stay the same and we would only get inflation (not visible in Figure 2). We may therefore call *F'* "full employment."

A higher level of employment could be reached only by measures that succeeded in reducing the genuine frictions so that more of the unemployed factors might be moved to where they could be used. This would lower the curve of supply price to a position like *ABCTF''HI*. (The complete removal of all frictions would bring us back to the reverse *L* curve *AFI* that we started with, *CF'H* coinciding with *CFH*. There would then be no bottlenecks or increasing costs until there was perfectly full employment at *F*.) The diminution in frictions would give us *T* as the level of output and employment reached with the same demand conditions, with a higher real wage (lower price-wage ratio), and a greater volume of employment. It would make possible a still further increase in output and employment in response to a further increase in demand to a new full employment level *F''* where wages would once more rise so rapidly as to prevent any further increase in demand from increasing employment any more.

Possible positions are then bounded on the right by a vertical line through the full-employment level F' or F'' so that the effective curve of supply price is $AF'I'$ or $AF''I''$. But the economy may very well find itself off the supply price curve anywhere *above* and *to the left* of it as long as the point is not so high as to show a real wage reduced below the level at which workers are able and willing to work. Such points would be like K in Figure 1 where, in a depression, both workers and employers would be happy if demand were greater and output and employment were greater at the existing price-wage ratio. Prices would meanwhile be rising if the point were to the right of B (price-level equilibrium employment), and they would be falling if the point were to the left of B . The point would be moving up if prices were rising relatively to wages, and down if the converse were true; and this movement might be increasing or decreasing the level of demand and thereby the level of output and employment. These would be short-run effects which could affect output and employment in either direction. The long-run tendency, if the quantity of money had any stability, would be for the value of the money stock to increase if the point was to the left of B and for the value of the money stock to fall if the point was to the right of B . The long-run equilibrium toward which the economy would be tending would therefore not be full employment at F , F' or F'' , but price-level equilibrium employment at B , or anywhere above B as long as it was below the height in Figure 2 at which the real wage is so low that workers are unable or unwilling to work).⁹

At points like F' or F'' it becomes very difficult to say whether we have buyers' inflation or sellers' inflation. I would be inclined to say that F' and F'' , like F , are points where sellers' inflation yields to buyers' inflation. But strictly speaking, at such points there is no over-all attempt to buy more goods than are available, and if sellers were not able to exert any influence on prices there would be no inflation at F' or F'' , or anywhere short of H . The real wage would indeed fall very low, but in the perfectly competitive market where sellers' inflation is impossible nothing could be done about this as long as labor was available, and there might be even more labor available as a result of the low real wage. On the other hand, at any point to the right of C at least a part of the pressure for increased wages, and for increased prices to cover increased wages and other costs, would be the result of increases in *demand*.

It may be that further development of this analysis will turn out to be fatal to the concept of sellers' inflation, of which I have become quite fond, but it seems to me that the unification and clarification of economic theory will be better served by the Marshallian approach of searching for continuities than by the dialectical or ceremonial union of opposites.

⁹ This limit is not a reflection of the supply curve of voluntary employment, since the lower the real wage (in the economy as a whole) the *greater* would be the supply of labor by workers sacrificing leisure for minimum subsistence. It would be a reflection of the conditions of the supply of labor only in the sense that it would be affected by the diminished survival of healthy workers; and this would be better represented by redrawing the whole supply curve to show the changed nature and size of the working population.

REFERENCES

1. J. K. GALBRAITH, *The Affluent Society*. Boston 1958.
2. A. P. LERNER, *Economics of Employment*. New York 1951.
3. ———, "Mr. Keynes' General Theory," *ILO Rev.*, Oct. 1936; reprinted in S. E. Harris, ed., *The New Economics*, New York 1947, pp. 113-32.
4. DON PATINKIN, *Money, Interest and Prices*. Evanston, Ill. 1957.
5. SIDNEY WEINTRAUB, *A General Theory of the Price Level, Output, Income Distribution and Economic Growth*. Trade title, *Forecasting the Price Level, Income Distribution and Economic Growth*. Philadelphia 1959.

COMMUNICATIONS

Relative-Prices and Income-Absorption Approaches to Devaluation: A Partial Reconciliation

The question whether devaluation would improve the trade balance of the devaluing country has been analyzed, in recent years, with the tools of two different approaches, the relative-prices approach and the income-absorption approach.¹ Quite often it seems that the use of different tools of analysis has called forth also different substantive conclusions. The purpose of the present note is to show that if the same set of assumptions is used, the same conclusion must follow whether one prefers to adopt one analytical method or the other.

Both approaches would grant that when there is a possibility for devaluation to increase employment and output in the devaluing country, the trade balance is likely to improve. The difference of opinion arises when there exists no possibility of an increase in output (that is, starting from a position of full employment). Here relative-prices theorists would still claim that devaluation is bound to improve the trade balance—provided, of course, that the foreign-trade elasticities are “right.” On the other hand, adherents of the income-absorption approach would state that this conclusion is unwarranted unless it could be shown first that domestic absorption is reduced.

In order to focus attention on this contrast, let us assume that the “foreign” elasticities (of supply of imports to the devaluing country and of demand for its exports) are infinite, so that foreign prices of exports and imports are given and unchanged by devaluation. Let us further assume that the starting position, before devaluation, is one of full employment, so that devaluation cannot increase employment and output.

Since foreign prices are given, devaluation means necessarily a proportionate increase in local-currency prices of exports and imports. If other local prices do not change, or at least rise less than in the full proportion of devaluation, profit maximization implies that factors of production should move from purely domestic industries into those which produce export goods or import substitutes; likewise, goods which could be either exported or sold in the local market should now become exports to a larger extent than before. This would mean, obviously, an improvement of the trade balance. This, in essence, is the way the relative-prices proponent looks at the effect of devaluation.

His adversary would, however, start with the basic identity $C + I + G = Y + MS$ (where C = consumption, I = domestic investment, G = government expenditures, Y = national income, and MS = import surplus); would

¹ The former, more traditional approach is best expounded by Fritz Machlup [1]; while the latter approach is largely connected with the name of Sidney S. Alexander, who first gave it an explicit form in [2]. Alexander has recently presented a modified version of this approach in [3].

say that Y is fixed by assumption of full employment; and would therefore argue that MS cannot decrease unless one of the components of domestic absorption— C , I or G —also decreases. If no effect of devaluation on one or more of these components may be shown, it would be concluded—without any regard to relative prices—that devaluation would not affect the trade balance.

Since both arguments must be correct—one by the hypothesis of profit maximization, the other by definition—one must show that if devaluation increases the prices of exports and imports, relative to domestic prices, it also cuts absorption; or, conversely, that if devaluation does not result in the curtailment of absorption, then it also could not end up with a relative increase in the prices of exports and imports. If correctly carried out, both approaches must lead to the same conclusion.

For convenience, I shall start by supposing that devaluation does not reduce the demand for absorption. It has to be shown, then, that the prices of exports and imports relative to domestic prices do not change; that is, that the general price level in the devaluing country increases in the proportion of devaluation. The argument proceeds as follows:

In the first stage after devaluation relative prices of exports and imports rise and the trade balance improves. This means that the amount of goods available for domestic absorption is smaller than it had been before devaluation (since it has been assumed that output and the terms of trade are not changed by devaluation.) But the demand for domestic absorption has not changed, so that (assuming an initial position of equilibrium) there is now an excess of aggregate demand for goods over their aggregate supply, and this tends to raise the price level. The excess demand and the tendency of the level of prices to rise will prevail as long as the price level has not increased in the full proportion of devaluation. Only when the general level of prices increases as much as the price of foreign exchange, and the trade balance returns to its predevaluation level, are we in a new equilibrium position.² In this way the relative-prices approach reaches the same conclusion as the income-absorption approach.

There is, however, one implicit assumption in this argument: that money is a "dependent" variable, that is, that the amount of money is adjusted and is expanded sufficiently so that the price level may increase in the proportion of devaluation. The result would be quite different if instead the amount of money remained fixed. To demonstrate this, I shall employ a very simplified version of Patinkin's model [4]. It will be assumed that absorption consists solely of consumption (that is, domestic investment and government expenditures on goods and services will be disregarded). The demand for consumption is assumed to be a positive function of real income and real cash balances. The bond market is not included in this model so that the rate of interest plays no role. Consumers have the choice of either holding money balances or spending on goods, but not of lending money. These simplifications do not detract, I believe, from the usefulness of the following analysis.

Let us examine two extreme positions; first, the one in which the general

² In the terminology used by Alexander in his more recent paper, this would mean that the "reversal factors" offset completely the initial effects of devaluation.

level of prices increases as much as the price of foreign exchange. The trade balance is unchanged compared with the predevaluation period, and since real income and output do not change, by our assumptions, the amount of goods available for domestic consumption (= absorption) does not change either. But demand for consumption falls, since the increase in prices, combined with a fixed amount of money, means smaller real cash balances. This is not an equilibrium position: an import surplus the same as before is too high relative to the new equilibrium balance. The unsatisfied equilibrium condition is the consumption function.

The other extreme possibility, where the general level of prices (including prices of imports and of exportable goods) is the same after devaluation as before it, cannot be an equilibrium position either. Here, the prices of international goods relative to other prices having been increased, there must be some improvement of the trade balance, so that the amount of goods available for domestic consumption must fall. But demand for consumption is still at its predevaluation level, since neither real income nor real cash balances have changed. Hence there would exist a state of excess demand. This, again, is not an equilibrium position. An increase in the relative price of foreign exchange is not compatible with unchanged demand for consumption.

Equilibrium will be reached, then, somewhere in between the two extreme positions. In the new equilibrium situation the price level will be higher than before devaluation, but less than proportionate to the degree of devaluation. There will thus be an increase in the relative prices of exports and imports compared to prices of domestic goods, and therefore an improvement in the balance of trade. The amount of goods available for domestic consumption will be smaller than before devaluation. At the same time, the demand for consumption will be smaller, too, since real cash balances will be reduced (while real income does not change).³

To summarize, an increase in the ratio of international to domestic prices, which is essential for a decrease in the import surplus according to the relative-prices approach, can take place if and only if there is a decrease of absorption, and a decrease of absorption can occur only if there is an increase in the general price level. Hence the two approaches to the analysis of devaluation must lead to the same conclusions.⁴

This analysis is obviously oversimplified. It stresses the dependence of absorption on the real value of money balances, while it abstracts, for instance, from the real value of other assets as possible determinants of absorption, or from possible effects of changes in relative prices on aggregate demand for goods and services. Yet it would be worth while to conclude by pointing out the crucial role of monetary policy followed after devaluation whenever the assumptions of this analysis are largely applicable. A "neutral" monetary policy, which imposes no limitation on the expansion of credit and on the

* These results could also be derived more rigorously mathematically.

³ Both in his earlier paper [2], and even more strongly in his recent contribution [3], Alexander recognizes and stresses the cash-balance effect as one which may reduce aggregate demand. Alexander does not show, however, the relation between this effect and changes in relative prices.

money supply, would render the devaluation a failure, under these conditions—unless, of course, devaluation is accompanied by other measures, for example fiscal ones, which work directly to curtail domestic absorption. A restrictive monetary policy, on the other hand, would lead to a successful devaluation under the present assumptions—provided that prices are flexible and that the institutional set-up in the devaluing country does not create a situation of “cost inflation,” where a restrictive monetary policy may create unemployment rather than inhibit a price rise.

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REFERENCES

1. F. MACHLUP, “Relative Prices and Aggregate Spending in the Analysis of Devaluation,” *Am. Econ. Rev.*, June 1955, 45, 255-78.
2. S. S. ALEXANDER, “Effects of a Devaluation on a Trade Balance,” *IMF Staff Papers*, Apr. 1952, 2, 263-78.
3. ———, “Effects of a Devaluation: A Simplified Synthesis of Elasticities and Absorption Approaches,” *Am. Econ. Rev.*, Mar. 1959, 49, 22-42.
4. D. PATINKIN, *Money, Interest, and Prices*. Evanston 1956.

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A Comparison of the Distributional Effects of Inflation and Taxation

As far as I know, only one attempt has been made to empirically evaluate the burden of inflation [1]. Bach and Ando estimated the distributional burden of inflation by measuring the monetary assets and liabilities of various income groups. They have shown that while the government sector is the most important net debtor, the household sector is a net creditor. This is true about the sector as a whole and about each income group within this sector. However, different income groups were discovered to have different ratios of monetary assets to liabilities. The closer this ratio is to unity, the smaller is said to be the loss caused by inflation.

The conclusion that everybody loses by inflation in proportion to his net money assets is not fully satisfactory, because it rests on the implicit assumption that the alternative to the burden of inflation is no burden at all. Actually, the real alternative facing the public is whether to bear the cost of inflation or the cost of some economic policy designed to achieve equilibrium through other means: direct controls, or monetary policy, or fiscal policy, or some combination of all. Even if inflation originated completely with the consumer and thus could be prevented by the use of self-restraint, the burden of the additional self-restraint needed to prevent inflation would have to be taken into consideration.

In this paper I shall compare the distributional burden of inflation with the distributional burden of taxation. Three types of taxes will be considered: (a) income tax, (b) sales tax with food not taxable, and (c) sales tax with food taxable. A number of assumptions, some of them quite heroic, will have to be made:

1. I assume a situation in which the supply of goods and services is perfectly inelastic and in which the demand for goods and services can be pictured as a rectangular hyperbola; in other words, the demand function is based on the quantity theory of money. Suppose that the demand function shifts because velocity increases. If nothing else happens, prices will increase until the quantity demanded is again equal to the quantity supplied. Alternatively, the government could tax away a sufficient amount of money assets to push the demand function back to the original level. The total loss to the public of real money assets would be the same in either case.

Should the demand function be based on the Keynesian determinants of demand, then the price adjustment would shift the demand function to the left by decreasing the real value of money and thus affecting the money market. Taxation would cut down the demand through its effect on disposable income and on the consumption and investment functions. In this case the losses caused by inflation and taxation need not be identical: their ratio would depend on the slopes of the relevant functions. It is conceivable that the spending spirit may be dampened more (or less) by taxation than by inflation. Lack of necessary information about the shapes of the relevant functions makes it impossible to use this theoretical framework.

Therefore I rely on the simpler, and empirically more manageable, analysis based on the quantity theory of money. I assume that the market will reach equilibrium if the public loses a given number of real dollars, regardless of whether the loss is caused by a price increase or by an increase in taxes.¹ While not entirely satisfactory on theoretical grounds, I believe this assumption to be adequate for the purposes of the rough estimate which I am undertaking. If important public issues are at stake, it is better to give an imprecise, tentative answer than no answer at all.

2. I assume that the taxes imposed as an alternative to inflation would be such that they would leave unchanged the proportions of the total income or sales taxes paid by each income group.

3. I neglect the fact that a general price increase would push some taxpayers into a higher income-tax bracket and thus lead both to losses of real money assets and of disposable income.

4. I assume that the entire sales tax is passed to the consumer.

5. I assume that the public does not hold shares issued by various corporations but "composite shares" in which all the stocks in existence participate proportionately. This assumption is necessary in view of the fact that the corporate sector as a whole is inflation-proof while many of the corporations are not.² By making this assumption I shall avoid the need to consider the possibility that some population groups are holding a higher proportion of

¹ This really means that I am assuming the income velocity to be uniform throughout the entire income range. If I were using a naïve Keynesian model, this assumption would imply a belief in a uniform marginal propensity to consume throughout the income range.

² It can be shown that a one per cent increase in prices in early 1950 would have caused all corporations to gain \$7 million—a negligible amount. However, some types of corporations would have lost amounts up to \$295 million, while other types of corporations would have gained up to \$128 million [4, Vol. III, Tables W-22 through W-43].

TABLE 1—MONETARY ASSETS AND MONETARY LIABILITIES OF VARIOUS INCOME GROUPS, EARLY 1950

Family Income before Taxes (1)	Monetary Assets (billion dollars) (2)	Monetary Liabilities (billion dollars) (3)	Net Monetary Assets (billion dollars) (4)	Capital Loss Caused by Inflation (million dollars) (5)
1. Under \$1,000	7.50	4.70	2.80	28
2. \$1,000 to \$1,999	10.80	4.20	6.60	66
3. \$2,000 to \$2,999	20.10	10.80	9.30	93
4. \$3,000 to \$3,999	21.80	13.40	8.40	84
5. \$4,000 to \$4,999	18.40	9.90	8.50	85
6. \$5,000 to \$7,499	26.70	12.80	13.90	139
7. \$7,500 and over	35.80	9.40	26.40	264
8. Total	141.40	65.20	75.90	759

Source: Columns 2, 3, 4: Raymond Goldsmith *et al.*, *A Study of Savings in the United States*, Princeton 1956, Table W-46.

inflation-proof shares than other groups. Lack of data makes this evasion a necessity.

6. I assume that changes in the rate of interest resulting from inflation or taxation can be ignored.

I. *The Burden of Inflation Compared with the Burden of Three Types of Taxes*

What are the costs imposed on various income groups by a uniform one per cent increase in prices? This degree of inflation is a very modest one; as such, it will make less unrealistic the restrictive assumptions. Table 1 contains the data on the monetary assets of various income groups, debts contracted in terms of the monetary unit, and the differences between these two amounts. All the income groups are net creditors to a smaller or greater degree.

While gauging the effects of inflation on various income groups, it would be an error to consider the net position of these groups only. Obviously the various spending units within each group will not be identical; some may be creditors to a greater degree than others, some may even be net debtors. In so far as this is true, in addition to the redistribution of wealth among the various income groups resulting from inflation, there will be a redistribution of wealth within each income group. However, the latter cannot be statistically measured.

Table 1 shows that a one per cent inflation will deprive the public of 759 million (real) dollars. Thus, in Table 2, I "impose" an income tax high enough to collect this amount. The last column of this table quantifies the burden such a tax would impose on the various income groups.

David C. Davies has recently specified the impact of a sales tax on the population of selected cities in 15 states [2]. He uses three alternative income concepts: gross income, net income, and disposable receipts. The gross- and

TABLE 2—ALLOCATION OF AN ADDITIONAL INCOME TAX, 1950 INCOME AND TAX RATES

Family Personal Income Before Tax	Income (billion dollars)	Income Tax Rate	Additional Anti-Inflationary Income Tax (million dollars)
Under \$1,000	1.943	0.0	0
\$1,000 to \$1,999	11.333	2.2	10.2
\$2,000 to \$2,999	20.273	3.8	31.7
\$3,000 to \$3,999	29.983	4.5	55.6
\$4,000 to \$4,999	31.533	5.3	69.8
\$5,000 to \$7,499	51.181	7.5	158.3
\$7,500 and over	71.736	14.7	433.4
Total	217.262	—	759.0

Source: U. S. Dept. of Commerce, *Income Distribution in the United States by Size, 1950-53*, Washington 1955, Table 10.

net-income concepts are identical with the traditional concepts of family income before and after taxes. The concept of disposable receipts includes certain money receipts other than the traditional ones and net changes in the spending unit's asset position with a view to providing a better index of permanent income. To assure comparability with my own data, all of which pertain to gross income, I employ Davies' figures based on the gross-income concept.

By using his figures I am making the assumption that the sales tax pattern

TABLE 3—EFFECTIVE SALES TAX RATES, FOOD TAXABLE AND FOOD NOT TAXABLE, FAMILY PERSONAL INCOME IN THE UNITED STATES, AND ADDITIONAL ANTI-INFLATIONARY SALES TAX

Income Group	Effective Tax Rate—Food Taxable	Effective Tax Rate—Food not Taxable	Family Personal Income (million dollars)	Additional Anti-Inflationary Sales Tax	
				Food Taxable (million dollars)	Food not Taxable (million dollars)
Under \$1,000	2.141	2.697	1.943	12.9	15.8
\$ 1,000 to \$1,999	1.430	1.403	11.333	50.4	47.9
\$ 2,000 to \$2,999	1.374	1.198	20.273	86.6	73.2
\$ 3,000 to \$3,999	1.326	1.202	29.983	123.5	108.6
\$ 4,000 to \$4,999	1.297	1.212	31.533	127.1	115.1
\$ 5,000 to \$5,999	1.261	1.243	25.603	100.3	95.9
\$ 6,000 to \$7,499	1.114	1.241	25.578	88.6	95.6
\$ 7,500 to \$9,999	1.045	1.087	23.364	75.9	76.5
\$10,000 and over	0.690	0.990	43.652	93.6	130.2
Total			217.262	759.0	759.0

Source: D. G. Davies [2], Table 1 C, p. 74. U. S. Dept. of Commerce, *Income Distribution in the United States by Size, 1950-53*, Washington 1955, Table 10.

prevalent in the 15 states analyzed by Davies would be the pattern selected by the federal government should it adopt sales taxes (with food either taxable or not taxable) as the alternative to taxes collected by inflation. The burden of an additional anti-inflationary sales tax of the kind described here is shown in Table 3.

I have considered three alternative methods for equating aggregate demand and supply: increased income tax and increased sales taxes of two sorts. If they are not imposed, excess demand will result in an inflation of one per cent. In all three cases the ratio of taxes paid by various income groups was left undisturbed. In Table 4 I compare the burden which these three equilibrating methods and the alternative of inflation will place on various income groups.

TABLE 4—THE BURDEN OF INFLATION, EQUIVALENT INCOME TAXATION, AND EQUIVALENT SALES TAXATION ON VARIOUS INCOME GROUPS, BASED ON 1950 INCOME, ASSETS, AND TAX STRUCTURE

Family Income Before Taxes	Number of Family Units (millions)	One Per Cent Inflation (in dollars)	Resources Collected per Family by: (in dollars)		
			Equivalent Income Tax	Equivalent Sales Tax	
				Food Taxable	Food not Taxable
Under \$1,000	3.861	7.25	0.00	3.34	4.09
\$1,000 to \$1,999	7.464	8.84	1.37	6.75	6.42
\$2,000 to \$2,999	8.091	11.50	3.92	10.70	9.05
\$3,000 to \$3,999	8.586	9.77	6.47	14.38	12.65
\$4,000 to \$4,999	7.054	12.04	9.89	18.02	16.32
\$5,000 to \$7,499	8.530	18.29	18.56	22.14	22.45
\$7,500 and over	5.304	49.77	81.71	31.86	38.97

Source: Tables 1-3. Numbers of families taken from U. S. Dept. of Commerce, *Income Distribution in the United States by Size, 1950-53*, Washington 1955, Table 10.

According to this table all families with incomes below \$5000 will profit if excess demand pressures are combatted by the use of income taxation. The income group receiving from \$5000 to \$7500 will find inflation to be the least burdensome tool of the equilibrating process, while the highest-income group will prefer a sales tax.

If this analysis is correct, it is surprising that we are continuously threatened with inflation; 35 million families out of the total of some 49 millions have a clear incentive to support the use of an alternative equilibrating tool, namely, the use of income taxation. Why does this majority of taxpayers fail to act? The absence of a vigorous anti-inflationary fiscal policy may be due to the superior influence wielded by the high-income groups. Or it may be that the taxpayers are not faced with a complete set of choices, but only with a very few crude ones. They can press the policy-maker to remain inert—and thus permit inflation—or to initiate some tax action. Such tax action, due to the relatively clumsy nature of all political processes, is bound to be undefined

at first and assume definitive shape only after protracted Congressional discussion. It would not be unreasonable for each group of taxpayers to fear that the taxation finally adopted will not be the one they would choose themselves. If so, then the alignment for and against inflation is likely to change drastically. Given a choice between inflation and the *worst* of the tax alternative considered here, 29 million families would find inflation less burdensome. Only 19 million families would prefer any one of the three taxes to inflation.

II. Sales Tax Reconsidered

Until recently, a sales tax was considered by many as the most disreputable tool of fiscal policy, endangering prosperity and oppressing the poor. In the past year, two voices were raised in defense of sales taxes. J. K. Galbraith in *The Affluent Society* [3, p. 248] points out that currently there exists a stalemate between the conservatives, supporting sales taxation, and the liberals,

TABLE 5—EFFECTS OF A SHIFT FROM ONE PER CENT INFLATION TO EQUIVALENT SALES TAXATION, 1950

Family Income before Taxes	Gains (+) or Losses (−) in Terms of Family Income before Taxes (per cent of income)		Sales Tax as Percentage of Inflationary Tax	
	Food Taxable	Food not Taxable	Food Taxable	Food not Taxable
Under \$1,000	+ .77	+ .63	46.1	56.4
\$1,000 to \$1,999	+ .14	+ .16	76.4	72.6
\$2,000 to \$2,999	+ .03	+ .10	93.1	78.7
\$3,000 to \$3,999	− .13	− .08	147.0	129.3
\$4,000 to \$4,999	− .13	− .09	149.5	135.4
\$5,000 to \$7,499	− .09	− .10	135.9	137.8
\$7,500 and over	+ .13	+ .08	64.1	78.3

supporting progressive income taxation. The resulting failure of the government to increase governmental receipts in turn leads to a failure to provide essential services (education, medical care) to the poor. Davies approaches the problem from a different standpoint. His empirical examination of the burden sales taxes place on various income groups leads him to the conclusion that the sales tax is a regressive tax only if one uses the gross- or net-income concepts as the basis for judging. When one shifts to the concept of disposable receipts, as a better approximation of the economically more meaningful concept of permanent income, the sales tax becomes a progressive tax for incomes up to \$6,000 [2, p. 74].

This paper suggests a revision of the attitude towards sales taxes. While a sales tax is a regressive tax, if we use Davies' gross- or net-income concepts as criterion, an inflationary tax^a is still more regressive (see Table 5). There-

^a The losses caused by a one per cent inflation represent the following percentages of gross income: Gross income under \$1000: 1.44; \$1000 to \$1999: .58; \$2000 to \$2999: .46; \$3000 to \$3999: .28; \$4000 to \$4999: .27; \$5000 to \$7499: .27; \$7500 and over: .37 (Tables 1 and 2).

fore the imposition of a sales tax, regardless whether food is or is not exempt, to avoid inflation results in a tax system that is more, rather than less, progressive. After we shift from inflation to sales taxation, the total real value of accumulated net money assets plus current disposable income becomes greater for all three low-income groups. Their inflation-caused tax liability decreases on the average by 20 per cent if food is taxable and 27 per cent if it is not, while the liability of the lowest-income group drops by 54-44 per cent. The next three income groups bear progressively a higher and higher burden of such a shift. The highest-income group, as also in Davies' study of the sales tax only, is an exception to the general progressivity of the shift. In this respect we find ourselves in a curious predicament: the spending habits and the tax and assets structures are such that an attempt to benefit the lowest-income groups forces us to pay a bounty to the high-income groups. One way out of this dilemma would be to modify our present structure of sales taxes so as to tax more heavily the purchases of "luxury" items; another solution would be to extend the coverage of the sales tax so that it would cover purchases of goods and services which currently are escaping the tax: purchases of life insurance, stocks and bonds, pension rights, etc.

III. Conclusion

Though the statistical evidence available for the purpose of comparing the redistributional effects of inflation, income taxation, and sales taxation with food exempt and with food not exempt is not fully satisfactory, I believe the results of this study show at least the relative order of magnitude of the four alternative tax burdens. The results indicate that the three lowest-income groups suffer more from inflation than they would suffer from the three alternative types of taxation we have considered. A shift away from inflation to any one of the three types of taxation would make our tax system more progressive. Obviously the goal of progressivity would be served most were we able to exchange inflation for income taxation. However, the study reveals that even a shift towards either type of sales taxation would mean the imposition of a more progressive system of taxation, with the exception of the highest-income group.

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REFERENCES

1. G. L. BACH AND ALBERT ANDO, "The Redistributional Effects of Inflation," *Rev. Econ. Stat.*, Feb. 1957, 39, 1-13.
2. D. G. DAVIES, "An Empirical Test of Sales Tax Regressivity," *Jour. Pol. Econ.*, Feb. 1959, 67, 72-78.
3. J. K. GALBRAITH, *The Affluent Society*. Boston 1958.
4. RAYMOND GOLDSMITH *et al.*, *A Study of Savings in the United States*. Princeton 1956.

Elementary Economics and Depreciation Accounting

Most introductory courses in economics describe depreciation, a technical accounting concept with far-reaching implications for economics, in extremely misleading terms. Students are confused by depreciation in abbreviated explanations of business financial statements or in discussions of national income accounts. Kuhlman and Skinner, in a recent text, are typical of the first. "Businesses, like consumers, save by not spending all of their income. They may set aside depreciation and obsolescence allowances in order to be able to replace plant and equipment" [9, p. 180]. The explanation does not jibe with Paton and Littleton on corporate accounting standards: "Under accrual accounting, depreciation is not a valuation process nor a means of capturing replacement prices from customers" [11, p. 17]. Jome, in a text on money and banking, states that "Good accounting policy seems to dictate that the purpose of the depreciation charge, after all, is to recover the money paid for an asset already constructed" [7, p. 429]. But the accountant May denies this policy: "It is a gross error to assume that it is a part of the function of accounting to insure by depreciation charges or otherwise, the return of the investment that has been made in the entity" [10, p. 24].

The basic problem here is that economists are using a word which has a "dictionary" or layman's meaning, but which also has a technical definition in the field of accounting. If economics insists on precise definitions for its own purposes of such common words as investment, capital, labor, profit, and competition, then should it not also recognize this practice in other fields? Accountants draw a clear distinction between Webster's definition of depreciation and their technical one, which they describe as an artificial convention. The American Institute of Accountants has formulated a standard expression for this arbitrary or conventional usage which can be duplicated by reference to leading authorities in the field of accounting. "Depreciation accounting [is] a system of accounting which aims to distribute the cost or other basic value of tangible capital assets, less salvage (if any), over the estimated useful life of the assets in a systematic and rational manner. It is a process of allocation and not valuation" [3, p. 76].

The outlook of accounting records is to the past. Depreciation charges refer to an expenditure which has taken place, and are merely a special method of writing history. Depreciation accounting enables the business firm to make several ledger entries, instead of one, when a capital expenditure occurs. The problem of replacement, which is not the purpose of depreciation, requires an outlook to the future. Sunk costs, expenditures which have already taken place, have no relevance to present or future investment opportunities. The accountants' use of depreciation—merely a method of recording a cost—ensures that no backward glance to a past expenditure which is over and done with can influence the rational consideration of a new decision on capital investment.

Some text-writers, fascinated by the role of "internal" funds in expanding business capacity, discuss depreciation charges as a "source" of money capital. "Among the various sources of capital, depreciation charges are extremely

important. Indeed, during the postwar years, corporate business as a whole raised more money in this way than it did through the sales of stocks and bonds" [13, p. 134]. "Depreciation reserves against relatively new equipment become available for current use. . . . The tremendous size of modern depreciation allowances means that the business community . . . may greatly increase its productive capacity without ever tapping new outside savings" [1, p. 180].

But nowhere in an elementary discussion have I seen reference to the obvious but vital fact that it is revenues, not charges, which provide money capital, and that depreciation accounting generates "internal" funds only when the firm is making profits, or when its losses do not exceed depreciation expense. As a result, many students rightfully wonder where, if "depreciation is only a bookkeeping entry" and depreciation reserves "do not consist of a pool of cash," the money *does* come from, when replacement time rolls around.

The 1958 depreciation charges of \$34.7 billion amounted to 50 per cent of gross private savings, a proportion which has fluctuated in recent years. Of the total funds available to corporations, \$19.6 billion or more than half was attributed to depreciation. Another \$6.0 billion represented retained profits. As funds to be spent by the firms, both these sums consist of money payments by purchasers for the output of corporations. Business prices, and sales, were \$25.6 billion higher than they would have been if depreciation costs had not been figured and if the firms had not made profits. The accounting technique of charging depreciation is no more responsible for the firm's revenues than is the necessity of paying for labor or material. The total funds available for investment by corporations, some \$30 billion, were used to acquire physical and financial assets, and to reduce liabilities. But there is no necessary correspondence between any one form of investment and any one source of the funds thus spent. Any part of retained profits, or borrowed capital, or money acquired through new issues of securities, or the difference between revenues and out-of-pocket expenditures which represents depreciation charges, may be spent on one or many uses. Replacement of worn-out or obsolete equipment is only one kind of possible capital expenditure, and the means of financing such expenditures bear no relationship to the means of recording the cost of previous expenditures. Perhaps the easiest way of emphasizing the lack of correspondence would be to review the years during the 30's and during the second world war, when depreciation charges exceeded expenditures for new plant and equipment. In the first period, depreciation charges did not provide funds for replacement because firms made losses, and their revenues did not cover the amount of the depreciation charges. In the second period, funds were provided, not by depreciation accounting but by higher wartime sales, yet these funds could not be spent on plant and equipment.

This disregard of the process of generating funds leads the text writers, when discussing price changes, to overstate woefully the effect of original cost in depreciation accounting. For example, "Suppose the price of a piece of equipment costing \$10,000 has doubled by the time it wears out. If a reserve had been accumulated at the rate of \$1,000 a year, when the machine had to be replaced at the end of ten years the accumulated \$10,000 would be only half enough to replace it" [6, p. 93]. But where has the \$10,000 been "ac-

cumulated?" If, in fact, the previous condition of making a profit or not making losses in excess of depreciation charges has been met, revenues to the firm will provide a ten-year stream of money capital amounting to \$1,000 a year. This money capital may be invested in inventories, accounts receivable, fixed plant, or the reduction of liabilities. If the firm is profitable, this new money capital presumably earns income, and at the end of ten years, therefore, the firm will be better off not only by the \$1,000 generated yearly, but also by the profits earned on this sum during the ten years, so that considerably more than \$10,000 will accrue. At only 8 per cent per year, for example, the ten-year proceeds will amount to \$14,487. Furthermore, it seems unrealistic to assume that the price doubling took place entirely within the tenth year, so that we may expect the firm's management, in expending this yearly \$1,000 of new capital, to have notice of current cost increases, and, presumably, use these in justification of price increases by the firm.¹

Textwriters can find some support, of course, in the criticisms of original cost depreciation given by business executives. A typical statement from management, in answer to a questionnaire from the *Journal of Accountancy*, reads, "I believe most everyone agrees that the increased cost of almost everything has made the provision for depreciation . . . inadequate to serve the purpose for which it was intended; namely, to provide funds for the replacement of plant and equipment" [2, p. 78]. DuPont Vice-President T. Crawley Davis was quoted recently urging the recovery, through depreciation allowances, of "the original investment in terms of current purchasing power" [5, p. 2]. In 1947 the management of United States Steel, without the approval of their independent auditors, charged extra depreciation expense, beyond that based on original cost, in order "to give some recognition to increased replacement costs" [14]. What chiefly concerns business executives, however, is not the abstract problem of analyzing inflation, but the concrete possibility of securing more favorable tax treatment by altering the definition of allowable depreciation. As Jones points out, "When businessmen say that depreciation is inadequate because it does not provide for replacements, they are simply taking an easy short-cut which avoids the complications of a full explanation" [8, p. 81]. The short-cut presents an impressive argument for altering the base of the corporation income tax; but such a proposal must be considered on grounds of equity of tax treatment and administrative possibilities, rather than being adopted because of a misunderstanding of the nature of depreciation.² The elementary texts do not provide the student with an accurate explanation of the accounting technique, and they infer rather careless ignorance on the part of the accounting profession.

The problem of how to treat changing price levels in accounting statements has been debated fervently and brilliantly for many years within the accounting profession. The advantages of a general price index and specially con-

¹ Cf. detailed calculations of the effects of depreciation charges in a period of rising prices, with given assumptions as to the rate of profit and of price chances [12].

² The report of a symposium conducted by the Tax Institute [15], illustrates clearly that the present concern over depreciation methods in times of inflation reflects the 52 per cent corporation tax rate. It should be remembered that depreciation accounting was generally accepted by U.S. business only after the income tax provided a financial incentive to do so.

structed indices to deflate current dollar figures have been argued at length. The consensus seems to be [4], reflecting the accountants' reliance on the principle of complete disclosure, that attempts to explain the effects of price changes are indeed worthy, but that such explanations should, for now at least, remain supplementary. Conventional accounting statements record the dollars and cents of transactions which have in fact occurred. No one interpretation, stemming from the problem of price changes or from any other single problem, should be allowed to supplant these basic data.

The economist has a perennial concern with real, as opposed to money, values, and a current concern with the influence of changing price levels upon capital investment. But the emphasis on depreciation charges as a means of replacement of plant and equipment within the firm leads to a misleading analysis of the capital consumption allowances, based on business depreciation figures, which are deducted from the gross national product.

National income or output can be estimated to measure welfare or to measure productivity, and some of the differences implied in the two concepts have been explored at length. From a welfare point of view (if you believe in freedom of consumer's choice) government expenditures on goods and services differ from business or consumption expenditures because consumers are not free to choose, by money votes, what government services will be produced, and because taxes must be paid. From the productivity angle, government product equals government purchases of goods and services because no market price exists for the output of government. The same problem arises in estimating the amount of capital consumed in any one time-period.

Conceptually, it is easy to say that current net national product consists of the goods and services currently available for consumption and investment after providing for the maintenance of capacity required to produce the amount of net national product. "Capital consumption" therefore would be the *current* loss in productive capacity of *currently* valued capital goods. The major difficulty in measuring this amount, as in measuring the product of government, is that no market prices exist, and hence current dollar figures cannot be used. The textbooks are careful to point out that the "capital consumption allowances" of the Department of Commerce do not coincide with the concept noted above. For example: "Over a longer period of time, the NNP would be a better representation of the economy's productivity, if accurate data could be obtained for depreciation and obsolescence allowances" [9, p. 282]. "In principle we must look at some current production of buildings, machinery, and so forth as simply the replacement of wear and tear on the outfit we use in production. . . . Unfortunately, however, our measures of capital consumption (the technical term for the using up of durable producers' goods and buildings) are very crude" [6, p. 424].

The emphasis on replacement, coupled with the incorrect notion that business depreciation accounting provides for replacement, allows no concern for the welfare implications of capital consumption allowances, which are worth more stress. Students come to economics convinced of the power of technological change in our land, and they find it reiterated throughout any contemporary introduction to economics. But the essence of technological change

in productive capacity is that it does away with replacement per se. Even when they continue to make the same product, firms do not purchase, at the end of a machine's lifetime, a machine identical to that which wore out. And the significant nature of productive capacity as a requisite for current income (or net national product) is that it provides the shifting and altering bundle of goods and services which consumers demand. Economists frequently suggest replacement cost as a basis for figuring aggregate capital consumption allowances, but this overlooks the basic fact that replacement rarely takes place. In fact, our present capital consumption allowances are imperfect not because depreciation allowances based on original cost do not match replacement costs, but because our concept demands that the entire capital structure, not just that which wears out in the current year, should be revalued each year in terms of its potential to satisfy current tastes and preferences. In 1958, \$28 billion, or 88 per cent of the total funds invested by corporations, was spent on plant and equipment. There are no data to divide these expenditures into replacement, expanded capacity, or wholly new forms of capital. Any attempt to do so requires an impossible definition—that of the word "new." But leading firms take pride in their sales of products which did not exist a decade ago, and the growth in productivity is attributed to technological change and new capital equipment.

Consequently, let us abolish the notion that depreciation has anything to do with replacement. From a welfare point of view, we should not want our capital replaced from year to year. Rather, we want it changed as our preferences change. From a productivity point of view, we want our capital improved, not replaced. And from the point of view of describing the accounting practices of individual firms, we are contradicting the express pronouncements of the accountants themselves.

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REFERENCES

1. G. L. BACH, *Economics*. New York 1954.
2. C. G. BLOUGH, ed., "Accounting and Auditing Problems," *Jour. Accountancy*, July 1958, 106, 78-79.
3. COMMITTEE ON ACCOUNTING PROCEDURE, AMERICAN INSTITUTE OF ACCOUNTANTS, *Accounting Research Bull. No. 43*, New York, May 1944.
4. COMMITTEE ON CONCEPTS AND STANDARDS, AMERICAN ACCOUNTING ASSOCIATION, *Price Level Changes and Financial Statements*. Columbus 1951.
5. T. C. DAVIS, interview in *DuPont Stockholder*, Fall 1957.
6. P. T. HOMAN, A. G. HART, AND A. W. SAMETZ, *The Economic Order*. New York 1958.
7. H. L. JOME, *Principles of Money and Banking*. Homewood 1957.
8. R. C. JONES, *Effects of Price Level Changes on Business Income, Capital, and Taxes*. American Accounting Association 1956.

9. J. M. KUHLMAN AND G. S. SKINNER, *The Economic System*. Homewood 1959.
10. G. O. MAY, "Generally Accepted Principles of Accounting," *Jour. Accountancy*, Jan. 1958, 105, 23-27.
11. W. A. PATON AND A. C. LITTLETON, *An Introduction to Corporate Accounting Standards*. Chicago 1940.
12. MICHAEL SCHIFF, "What Happens to Depreciation," *Jour. Accountancy*, Mar. 1959, 107, 37-41.
13. MELVILLE ULMER, *Economics, Theory and Practice*. Boston 1959.
14. UNITED STATES STEEL CORPORATION, 1947 *Annual Report*.
15. *Depreciation and Taxes*. Report of a symposium conducted by the Tax Institute. Princeton 1959.

Measuring the Success of the Elementary Course

There is justifiable dissatisfaction with the state of economic understanding in this country, and therefore with the results achieved by the teaching of economics—especially at the elementary level. The work in the high school field of the Joint Council on Economic Education reflects this feeling, as does the search at various colleges for some new approach.

The purpose of this communication is to present the findings to date of a survey of the success of the elementary course. Identical or closely similar sets of true-and-false questions have been administered—when possible both before and after the course.¹ The experiment has revealed (1) an unsatisfactory rate of progress generally, and (2) particular fields in which students have learned little or nothing.

I. The Questions Used

Eight sets of 50 questions have been used, each containing 5 propositions on production, cost and business organization; 8 each on price, money and banking, income and employment, distribution of income, and international economics; and 5 on public finance. The sets come in pairs, each of the two treating the same topics though in slightly different wording.²

In preparing the questions, the attempt was made to apply the following principles: (1) to use ordinary language rather than technical terms, and to avoid both catch questions and self-evident propositions; (2) to make the statements analytical rather than factual—though there are some exceptions, dealing with topics like rates of growth, distribution of income, banking prac-

¹The origin of the survey was in the 1953-55 "self-study" of New York University financed by the Carnegie Foundation. All faculty members were asked for suggestions as to how academic work could be evaluated; and this method occurred to the writer as an obvious way of doing it. In 1954-56 it was tried at more than twenty colleges, and in 1958-59 at several more. The survey did not draw on the Carnegie grant.

²A few of the questions selected in 1954 and 1955 were those of other writers, taken or adapted from teaching manuals. Other questions are undoubtedly almost identical with ones used elsewhere. The writer does not claim that, where they differ, his own are superior to those developed by others.

tice and tax structure; (3) to make most of the propositions important ones—including if necessary points not dealt with in textbooks whose solutions might require students to have recourse to their reasoning power; and (4) to make each proposition so clear and objective that any teacher would agree on the right answer, even if he might have preferred to treat some other aspect of the topic.

Regarding the last point, it was sometimes necessary, where qualified economists differ on an issue, to select propositions so extreme that all would agree on them. To use hypothetical examples, "Public debt is always bad" and "Public debt is never dangerous" are false, though "Economists see no reason why public debt should not be made the vehicle of economic expansion" would draw divergent answers, and therefore would be unusable.

The 50 questions are answered in 25 minutes, 100 questions—when used—in 50 minutes. Scoring is on the scale of 100, with 2 points for each correct answer and no penalty for wrong guesses. Since guessing would, on average, yield a score of 50, this is the equivalent of zero. It implies that a student has as many false as true notions about the questions being answered.³

II. General Results of the Test

Scores recorded on the six sets used through June 1959 are summarized in Table 1. The average of all grades before the course, for the different sets of questions, has been between 52 and 58; and the average after it, between 61 and 68. The widest spread among men's colleges on a single set was from 60.6 to 71.0; and among women's colleges, from 56.6 to 70.1 (both were Set E, after the course). The spread was usually much smaller: thus on Set A, for men, it was from 56.6 to 58.2 at the start and from 63.6 to 71.9 at the end.

Male students have begun with a slightly greater knowledge of the subject, and have usually maintained or improved that advantage. At 12 coeducational colleges, the unweighted arithmetic mean of the male advantage was 1.9 points before, and 2.7 points after the course.⁴

* One 12-year old boy asked to take the test. Scoring 58 on Set A, he proceeded confidently to B, where his mark proved to be 42. It took 100 questions—but only 100—to reveal his true knowledge of economics! Though the score of a single student on 50 or even 100 questions may be misleading, the law of averages has emerged whenever 20 or 25 took the test.

⁴ Numbers of colleges and students taking the tests:

Test Sets	Beginning of Course				End of Full-Year Course			
	Men		Women		Men		Women	
	Colleges	Students	Colleges	Students	Colleges	Students	Colleges	Students
A	4	1,123	3	296	7	978	4	163
B	3	711	3	265	5	581	6	184
C	5	784	3	189	6	573	4	52
D	3	284	3	99	5	392	4	126
E	3	429	3	206	6	921	6	235
F	3	859	3	253	4	359	4	70

TABLE 1—AVERAGE OBJECTIVE TEST SCORES BEFORE AND AFTER
FULL-YEAR ELEMENTARY COURSE

Question Set	Time of Test	Arithmetic Means by Colleges		Arithmetic Means by Students	
		Male	Female	Male	Female
A	Before	57.3	54.8	56.9	54.2
	After	67.3	64.7	67.0	63.8
	Gain	10.0	9.9	10.1	9.6
B	Before	55.9	54.7	55.3	54.0
	After	65.5	62.5	64.7	61.9
	Gain	9.6	7.8	9.4	7.9
C	Before	57.6	54.3	57.5	54.3
	After	68.0	63.1	67.9	63.2
	Gain	10.4	8.8	10.4	8.9
D	Before	53.2	52.8	53.5	52.8
	After	61.7	60.8	61.4	61.0
	Gain	8.5	8.0	7.9	8.2
E	Before	55.9	53.8	56.4	54.7
	After	65.6	61.9	65.8	62.4
	Gain	9.7	8.1	9.4	7.7
F	Before	54.1	53.1	54.0	53.5
	After	62.2	61.3	62.1	61.0
	Gain	8.1	8.2	8.1	7.5

Table 2 analyzes the progress made in another way, by separate colleges. The best class score after the course, 71.9, was not truly a "C" average. The class was not 71.9 per cent of the way along from 0 to 100, but 43.8 per cent of the way (50 being the equivalent of zero). Since this particular class had begun with a score of 58.2, it had progressed in reality only 13.7, out of a potential of 41.8 points. At the start, it could answer 29 out of 50 questions; at the close, 36. At the other extreme, one class could answer 27 or 28 questions at the start, and only 29 at the end.

Several by-products of the experiment are:

1. More than 2,000 of the beginning students were asked to name their high school course whose content was closest to that of the course about to be taken. Those who had taken problems of democracy, social studies, civics, and American history did no better than average on the opening test. Students who had taken economics, however, did better—male students with this background averaging 57.6, as compared to 55.8 for others; while women students

TABLE 2—BEST, AVERAGE AND LEAST GAINS BY COLLEGES GIVING OBJECTIVE TESTS BEFORE AND AFTER COURSE

	College with Best Gain		College with Average Gain		College with Least Gain
	Less than 50 Students	100 Students or More	Median	Simple Arithmetic Mean	
Men (18 colleges)					
Before course	58.2	59.2	54.5	55.7	54.9
After course	71.9	71.3	64.0	65.0	60.4
Gain:					
Points	13.7	12.1	9.5	9.3	5.5
Per cent of potential gain (to 100)	32.8	29.7	20.9	21.0	12.2
Women (15 colleges)					
Before course	53.3	53.3	54.1	54.1	55.1
After course	66.4	59.9	62.7	62.1	58.6
Gain:					
Points	13.1	6.6	8.6	8.0	3.5
Per cent of potential gain (to 100)	28.1	14.1	18.7	17.4	7.8

averaged 55.2 and 53.9, respectively. The value of the high school course is evidently slight, at least by this measurement.

2. Northern institutions averaged 2 or 3 points higher than southern ones, both before and after the course.

3. Improvement in one-semester courses ran between 50 and 70 per cent of that in full-year courses at the same colleges.

4. Evening classes, consisting usually of mature students with jobs, had slightly higher scores before the course, but had lost a little of their advantage at the close.

III. An Example: Set A, Men

Set A is reproduced herewith, along with the average scores of the 1,123 male students taking the test before the course, and the 978 taking it after a full-year course. Teachers using these questions can thus know where their students stand as compared to the 978.

	Average Score (per cent.)	
	Before	After
1. The increase in the education received by the average American is the most important single cause of the rising productivity of American workers since 1800.	53	76
2. The lowest cost combination of the various kinds of labor and capital used to make a product will differ according to the price of each to the firm.	70	84

3. There is an economic law which limits the amount of labor and capital a farmer can economically put into cultivation of his land.	T	62	85
4. Within each individual industry, the largest firms have a significant cost advantage over smaller ones.	F	14	36
5. A general rise in the stock market will tend to reduce the ability of productive industry to raise money from investors.	F	83	88
6. The free price system is a method of rationing based on ability to pay.	T	51	60
7. When a short wheat crop pushes bread prices up, most economists would endorse a subsidy to bakers if there were no other way to prevent the rise.	F	53	70
8. Sales of the common necessities of life tend to increase sharply when there is a drop in their price.	F	55	84
9. The price of a product is likely to be closer to its average unit cost of production over the long run than in the short run.	T	87	93
10. When a big movement of hogs to market causes pork prices to fall, this will tend to push beef prices down also.	T	61	79
11. The operations of a successful speculator in cotton generally tend to reduce the fluctuations in its price.	T	52	51
12. When a "gray market" (resale by distributors at more than list prices or to favored customers only) exists in a product, it is evidence that its producers are charging more than consumers can afford to pay.	F	65	79
13. Public regulation (assuming it to be politically feasible) is the only long-run economic remedy for a skyrocketing price like that of coffee or rubber at times.	F	49	71
14. The most important function of money is to serve as a store of value.	F	52	71
15. The fact that a country is on the gold standard ensures the stability of its domestic price level.	F	76	88
16. When a country is on the bimetallic standard (both gold and silver being coined), a fall in the price of silver due to a rise in output of mines will cause gold to replace silver in monetary circulation.	F	55	62
17. When gold comes into a country, it is likely to mean that the banking system can expand its loans and investments to several times the amount of gold.	T	54	79
18. When business firms draw checks to repay their bank loans, it does not change the nation's bank reserves but it does increase the excess reserves of the banks.	T	69	66
19. An increase in the amount of paper money in circulation outside of banks tends to restrict the expansion of credit.	T	48	49
20. A reduction in legal reserve requirements of commercial banks tends to make it easier for business to borrow money.	T	72	86
21. Depreciation of a country's currency tends to lower the cost of living.	F	71	74
22. Inflation tends to enrich creditors at the expense of debtors.	F	50	69
23. The outstanding evil of peacetime inflation is that it reduces the real purchasing power of the national income.	F	14	18
24. Experience and logic indicate that it is hard for a modern democratic country to have full employment and stable prices at the same time.	T	52	62
25. When corporations draw on their working capital to pay higher dividends, it tends to increase the ratio of national consumption to income.	T	52	46
26. When unemployment is large, seemingly wasteful spending may be defensible because of its effect on employment.	T	67	81

27. Business cycles (booms and depressions) are as characteristic of barter economies as of money economies.	<i>F</i>	35	53
28. One reason business cycles are less severe than they might conceivably be is that a decline in construction causes an offsetting rise in other industries (by releasing men and goods to them).	<i>F</i>	51	66
29. A real difficulty in planning public works to combat depressions is that the expenditures may not be made at the best time from the point of view of those who need the new facilities.	<i>T</i>	79	75
30. In modern capitalist countries the gap between rich and poor is lessening.	<i>T</i>	74	86
31. If it were practical to equalize incomes, the increased incentive to those who now earn little would probably cause total production to expand.	<i>F</i>	74	82
32. Rapid population growth tends to improve the economic status of the average worker compared to that of the owner of capital.	<i>F</i>	81	88
33. Economic science offers no disproof of the claim that an employer who gives superior conditions of work has a right to pay lower wages.	<i>T</i>	47	53
34. An increase in population will tend to increase the rent of land.	<i>T</i>	88	91
35. Interest rates tend to be higher on short-term than on long-term loans to governments.	<i>F</i>	30	36
36. Accumulation of wealth by an economy tends to lower the rate of interest.	<i>T</i>	63	73
37. When national income declines to depression levels, profit as a percentage of income tends to rise.	<i>F</i>	59	67
38. An advantage when people buy goods produced at home instead of imports is that the country doesn't lose the money paid for the imports.	<i>F</i>	34	49
39. A domestic business boom is likely to cause a country's imports to increase faster than its exports.	<i>T</i>	34	36
40. A better economic defense can be made for protective tariffs levied by backward countries than for those levied by advanced countries.	<i>T</i>	54	71
41. American consumers are beneficiaries of our tariff (because it encourages production by the protected industries).	<i>F</i>	39	76
42. The aim of "exchange controls," by which a government allots available foreign currencies among its citizens, is to keep a country's rate of exchange from being controlled by artificial influences.	<i>F</i>	32	47
43. An increase in the world price of cotton is likely to raise the exchange rate of the dollar in terms of foreign currencies.	<i>T</i>	63	58
44. Use of foreign capital to develop a country's industries is demonstrably inferior and more costly in real terms than use of domestic capital.	<i>F</i>	36	51
45. A country which makes a loan abroad stimulates its own business activity thereby.	<i>T</i>	82	85
46. Expanding the public debt does not necessarily impose an over-all net economic burden on a country if the money is used for valuable public works.	<i>T</i>	73	81
47. Most experts in public finance hold that the wisest course for a nation with a large public debt is to pay it off without any delay.	<i>F</i>	79	93
48. An increase in personal income tax exemptions is more likely to stimulate spending by consumers than is a percentage reduction in income tax rates.	<i>T</i>	60	57
49. An excise tax on a commodity normally lays an economic burden on both its producers and its consumers.	<i>T</i>	79	67
50. A tax on the value of land tends to be passed on to the tenant in the long run rather than to rest on the landlord.	<i>F</i>	19	16

On 8 of the 50 questions in Set A, the course improved the average knowledge of male students by 49 per cent or more of the difference between the beginning mark and 100. A brief comment on each of these follows:

No. 1. 49 per cent of potential gain achieved. Good progress was evidently made in learning that productivity is related to capital investment, innovation and similar factors.

No. 3. 61 per cent. The law of diminishing returns was grasped at the end of the course by three-fifths of the students who had not sensed it at the start.

No. 8. 64 per cent. The difference between elastic and inelastic demand was well taught.

No. 15. 50 per cent. Three-quarters of the students already knew that the gold standard does not ensure price stability, and this was learned by half the remaining students.

No. 17. 54 per cent. More than half the students who had not already known it learned the fundamental principle of multiple bank expansion on additions to reserves.

No. 20. 50 per cent. More than 70 per cent of the students realized already that easing bank reserves facilitates lending, and half the rest learned this during the course.

No. 41. 61 per cent. Very good progress was made on the tariff questions of all sets, as on this question from Set A. On a "protariff" question, No. 40, progress was less (37 per cent) than on this "antitariff" question, No. 41. The antiprotection position of textbooks and teachers is known to all.

No. 47. 67 per cent. Almost 80 per cent of students thought at the start of the course that it would be foolish to try to pay off the public debt at once; and two-thirds of the rest learned this during the course. "Prodebt" propositions were well taught in the course, as appears in several of the question sets.⁸

It can hardly be said that there was real success on the other 42 questions, where progress toward the score of 100 was 47 per cent or less. On 8 of them, there was retrogression—though if more students had taken the test, it would probably appear that several decreases in scores were not statistically significant.

No. 11. Both at the beginning and the end of the course, guesses as to the effects of speculation went about fifty-fifty. Speculation would seem to be an important enough subject for students to be given an idea of its fundamental nature and consequences—though not of its technical details.

No. 18. It is perhaps surprising that on so complex a banking question two-thirds of the students should have known, sensed or guessed the answer at the start. The apparent decrease in knowledge during the course may prove not to be statistically significant, although perhaps students became confused by attempting to undertake a complex chain of reasoning.

No. 25. There was a substantial decline in realization that dividends have an impact on consumption different from that of building up working capi-

⁸It could be argued that students had merely learned the instructor's views, both on this and the tariff question, and given back on the test what they thought he wanted. This might or might not be true as to the tariff, but the fact that 79 per cent of students took a "prodebt" attitude at the start on No. 47 supports the inference that most answers at the end were sincere.

tal. This could well be the result of overemphasis by teachers on the fact that higher incomes are saved more often than lower ones. It appears that the role of dividends in consumption, as well as their role in saving, should be referred to in the course.

No. 29. The decline in understanding on this question indicates that teachers may have oversold public works as a remedy for depression, with the result that a few students lost their original realization that they are not a panacea. A few extra words in class should clear up this confusion.

No. 43. This retrogression may have been a statistical accident, but the absence of improvement is significant. A student not knowing that rising world prices for an American export commodity tend to improve the dollar's position can hardly be said to understand the elements of foreign exchange.

No. 48. The decreased understanding on this question—which opens up an issue that has threatened to divide the national political parties—may be another statistical accident. But there was at least no gain!

No. 49. This rather sharp drop in realization that an excise tax is a burden on the producing industry may be a by-product of teacher emphasis on the impact of such taxes on the consumer. Perhaps some students decided that this meant that industry simply "passes all taxes on" with no loss to itself.

No. 50. The fact that students lost ground on the shifting of land taxes might be due in part to this same emphasis by teachers on tax shifting, except that most students (perhaps tenant-oriented in their thinking) believed from the start that land taxes are shifted. Until they learn the opposite, such a famous American philosophy as Henry George's must be a closed book. But teachers seem to have bypassed the difficult problem of explaining land-tax incidence.

On Set A as a whole, the average grade of 628 male students who had taken one-semester courses was 65.8, as compared to the grade of 67 for the 978 full-year students. On money and banking, and public finance, there was no significant difference in the scores of the two groups. On international economics, the full-year students gained 8 percentage points and on production, cost and business organization 11 points, more than the one-semester students. The largest single difference, 20 points, occurred in No. 4, on economies of scale, and No. 41, on the tariff.

Failure of the course at particular institutions to cover important areas thoroughly is also revealed by the tests. To cite one example, the several hundred students at one college averaged only 65 at the end of the full-year course on question 2 of Set A, whereas at all others the scores were between 80 and 95. Apparently the course at this college skimmed cost analysis (it ranked lowest on question 4 also).

IV. Purposes of the Survey and Possible Objections

1. The first aim has been to test whether the course is achieving generally satisfactory results. When classes score 55 at the start of the course and only 65 at the end, it is hard to boast. Possibly the advanced courses which emphasize institutions do better. One teacher reports having tried the same experiment in his 20-student course in marketing. The class averaged 36 right out

of 60 true-and-false questions on marketing institutions and policies the first day of the course, and 48 right, on the same questions, in the final examination. We need at least this much success in the more important elementary course.

2. The purpose of giving colleges a chance to compare results has been effectuated by circulating scores at intervals, with each school identified by a code number.

3. Individual topics reflecting the greatest, and particularly the least, success, are highlighted by the test. Also, testing before the course enables the teacher to spot some of the areas of special ignorance or prejudice which he will face.

4. Finally, it was hoped to develop 500 objective questions which a teacher could thereafter give, with any selection or in any combination he wished, in the knowledge of average scores elsewhere.

Secondary purposes might be served by a more extended survey. Are scores correlated with size of classes, or with textbook? On what topics do women students do worse or better than men? Has reorganization of the course at a particular college improved results?

These questions, and this whole method of testing, are subject to various possible objections. Some of these objections and possible answers to them are as follows:

1. Will the brightest students be the ones to think of the qualifications to a simple proposition, and hence be more confused than others as to whether to call it true or false? To test this objection, the scores of the 182 whose grades on Set A had been 76 or above, out of the first 1,136 male students to take the set (after either the full or half-year course), were compared with the averages for all 1,136. On every question the 182 averaged significantly better than the rest. The closest the two groups came was on Nos. 49 and 50, for which the 182 made 86 and 88 per cent as many errors per man, respectively, as the other 954 students. On average, they made only 59 per cent as many errors.⁶

2. Is reasoning power tested in true-and-false questions, or do the students merely guess? The answer is that the individual student may often guess, but that it is statistically impossible for every class to have improved its average grade, as has been the case, without an increase in understanding.

In one class, the students were given only 25 questions and were asked to state in a single sentence the reason for each answer. A good reason for a correct answer received 3 points' credit, a weak reason one point, and an illogical reason nothing. Between the beginning and the end of the course, this class increased its average score by 9.3 points; while the computed average validity of the reasons on correct answers improved by 8.6 points. Both on answers and on reasons, the class covered 18 to 19 per cent of the distance from its starting point to 100.

3. Some teachers are opposed to the use of objective questions. It can be admitted that a well-chosen, well-corrected essay question will show more of the

⁶ Those who might doubt that the students scoring highest on these tests are the "brightest" are asked to note the correlation with other marks, reported later in this communication.

student's abilities. The essay question, however, (a) sometimes goes wrong when the student writes so badly that it obscures his real understanding; (b) may call for more of the grader's time, in deciphering handwriting and comparing the different essays, than he may be able to spare; (c) cannot cover as many parts of the course in 50 minutes as 100 true-and-false questions can; and (d) does not permit accurate comparisons of attainments between different colleges, or the same college in different years. Thus the objective question has definite functions in supplementing the essay.

In so far as teachers supplied course grades for their students, a correlation was revealed between these and the test grades. In the largest group for which marks were supplied, 292 students took the test, with the following results, in part:

RELATION BETWEEN TEST SCORES AND FINAL EXAMINATION GRADES

Test Score	Average of Same Students on Final Examination in Course	Range of Scores on Final Examination	Number of Students
80	78.2	86-71	6
78	77.6	85-72	7
76	77.2	84-62	18
74	75.2	85-69	19
72	70.2	80-60	28
70	68.9	81-59	29

Where grades on the final examination just mentioned, or on essay questions generally, differ sharply from those on the objective tests, the latter can supplement the former. Among the 18 students who received objective test grades of 76, one scored 84 and another 62 on the examination, but they may be closer in attainment than these B and D grades would imply.

4. Some have doubted that particular questions on which average class scores after the course were very low (e.g., below 40) should be continued in use. It seems to them unfair to grade students on propositions which were not learned anywhere. However, on most of the questions with lowest scores the average improved during the course—as on Nos. 4, 23, 35 and 39 of Set A, though No. 50 is an exception. This suggests that the propositions should not be excluded, but that their difficulty calls for more attention to them by teachers.

5. It must be conceded that not all the questions in these sets are covered in all elementary courses, and not all could be squeezed into every course under any conditions. For three reasons, this weakness was not considered fatal. First, students should be able to answer certain questions by their reasoning processes as developed in the course, even though the particular point has not been covered. Second, low scores at these points may serve to highlight gaps in the course—in this respect the questions test whether coverage of the course is adequate rather than how well the topics it actually covers are taught. Finally, though no student could possibly score 100 on a test on which he has only half a minute to answer each question and which contains

some not covered in his textbook or lectures, this does not make the broad comparisons invalid. A teacher whose course omits a number of the topics can remind himself that courses elsewhere are also incomplete.

6. The writer has been told that some of his propositions are "opinion questions," answers to which will depend on the student's prejudices, and even that his own answers to a few are mistaken. Each reader must decide for himself how far these criticisms are justified. A teacher who would like to reject a few propositions out of 50 can remind himself that classes elsewhere are being marked on the same basis as his own.

It will be appreciated if any teachers who use Set A, reproduced above, will send full results to the writer—clearly distinguishing type and stage of course, number and sex of the students, and score on each question. The other sets will be sent to anyone making inquiry, along with answer keys (presumably not needed). A full tabulation of results will be circulated among participants.

Suggestions will also be welcomed on topics that should be included in extending the list from 400 to 500 questions.⁷

SIMON N. WHITNEY*

⁷ To illustrate, there are suggestions now on hand to include another pair of questions on the relation of price and cost and a pair on customs unions.

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BOOK REVIEWS

General Economics; Methodology

Jan Tinbergen Selected Papers. Edited by L. H. KLAASSEN, L. M. KOYCK, H. J. WITTEVEEN. Amsterdam: New Holland Publishing Co., 1959. Pp. xii, 318. \$8.00.

This is a very well chosen selection of eleven papers by the well-known Dutch economist Jan Tinbergen. The selection covers five general fields:

1. *Business cycle theory and policy.* Here we have the well-known model of the shipbuilding cycle (published in German in 1931), an essay on types of equilibrium and business cycle movements (published in Norwegian in 1944), "An Economic Policy for 1936" (paper given originally in Dutch), "Lag Cycles and Life Cycles" (published in Dutch in 1938), "Tonnage and Freight" (published in Dutch in 1934).

These essays together with the two volumes published in 1939 by the League of Nations (*Statistical Testing of Business Cycle Theories*) certainly establish Tinbergen as an outstanding contributor in this field. Deep theoretical insight based upon statistical verifications is combined with a passionate interest in and concern for questions of economic policy. Are there for instance now many economists who would dare to publish their proposals for an economic policy for 1936? Tinbergen, because of his deeper theoretical insight and admirable statistical skill has been more fortunate in his predictions and proposals for economic policy than most of his econometric colleagues in other countries. The judicious combination of mathematical theoretical investigations with empirical statistical treatment of concrete data is characteristic of Tinbergen's business cycle theories.

2. *International economics.* This section contains the following essays: "The Equalization of Factor Prices between Free Trade Areas," a critical discussion and amplification of the essay published by Samuelson in the *Economic Journal*, June 1948; "Long-term Foreign Trade Elasticities," published in English in 1949; "On the Theory of Economic Integration" (published in English in 1952); "Customs Unions: Influence of Their Size and Their Effect" (published in English in 1957).

It is not surprising that a citizen of Holland, a country whose historical importance and very life are closely connected with international trade, should have been attracted to the economic problems connected with this field. Apart from his pioneering studies of elasticities, his investigation of the consequences of economic integration and customs unions are most important. The welfare concepts used in these investigations are total production and real income. A number of very interesting results are established which are of great consequence for international trade policy. It is, for instance, shown under somewhat simplified conditions that economic integration may under certain circumstances, lead to a fall of real income in the countries concerned.

3. *Long-term economic development.* Here we have the following essays: "A Simplified Model of the Causation of Technological Unemployment" (published in English in 1939); "On the Theory of Trend Movements" (published in German in 1942). The study of technological unemployment uses U. S. data from 1910 and 1919-1932. The effects of mechanization, rationalization and new combinations are explored. In view of the recent tendency to automatization a continuation of these studies with the help of more recent data would be very desirable. The study on trend movements uses data from Germany, Great Britain, France, and the United States for 1870-1914. The mathematical model is influenced by ideas of Keynes. It is shown that even very simple models yield exceedingly complicated mathematical formulae for trend movements.

4. *Distribution of income.* This section contains the following essays: "The Influence of Productivity on Economic Welfare"; "On the Theory of Income Distribution" (published in English in 1956). In the paper on productivity Tinbergen uses his technique of linearized macroeconomic models to investigate various goals of economic policy ("targets": social equilibrium, balance of payments, employment), which are being pursued by the application of "instruments" (wages, taxes, profit margins). Increase of productivity not always leads to desirable results. The paper on income distribution is purely theoretical. The log-normal distribution of incomes is explained in terms of the demand and supply of productive contributions. The possibility of collecting data in order to verify the ideas statistically is also indicated.

5. *Economic systems.* One essay: "The theory of the optimum regime." This essay, which deals with the most important of all current problems of economic policy, is perhaps the most interesting contribution in this book. Here Tinbergen courageously attacks the crucial problem of our time. A simple welfare function is used, a sum of all individual utility functions involving consumption and effort. This is somewhat reminiscent of Pigou's economics of welfare. A Pareto optimum implies the liberalistic decentralization thesis, but it is pointed out that this proposition may involve lump-income transfers, because the individual optima may not be otherwise attainable. The discussion of external effects and increasing returns proceeds along familiar lines. It is recognized that the decision between free capitalism and collectivism is ultimately based upon ethics; but the author (whose own position is perhaps nearest to Fabian socialism) believes that, nevertheless, discussion is possible and desirable. He sees actually a narrowing of the gap between the systems of the East and the West. This view points in the same direction as recent articles by Oskar Lange.

There is also a comprehensive bibliography of more than 150 items, mostly in Dutch. This splendid collection of essays can be recommended highly to all economists who do not shy away from a little mathematics. It is difficult to imagine any member of the profession who would not profit from a careful study of some or all of these articles.

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Economics for Pleasure. By G. L. S. SHACKLE. New York and Cambridge: Cambridge University Press, 1959. Pp. x, 269. \$3.95.

Shackle's reasons for writing this book are made quite clear and may be stated in the following propositions: (1) It is "useful and indeed essential . . . for the leaders of modern life to have some knowledge of economic theory" (p. ix). (2) Noneconomists generally regard economics "as dismal if no longer a science" (p. 1). (3) The unattractiveness of economics to the nonspecialist stems from the economist's propensity to beclutter his work with mathematical symbols—"But how can a subject be readable that requires the brain-teasing study of diagrams and equations?" (p. ix). (4) "The problem, then," according to the dust jacket, "is to bridge the gulf between the economist on one side and the businessman, the banker, the politician, the journalist, the student and the ordinary man on the other. The solution lies in this book—for here, without any mathematics, without any diagrams, and in good plain English, the essence of economics is laid bare."

If Shackle had written a nonmathematical introduction to economics by simply leaving out those concepts which are usually expressed as an equation or a geometric chart, his work would hardly be unique. But he chose the much more difficult task of including all of the ideas usually presented in an elementary economics course; and he expresses these ideas verbally and without the assistance of any mathematical paraphernalia except for an occasional numerical table. In less skillful hands this effort might have resulted in a fiasco, and most economists are likely to feel that Shackle's book is less than completely successful.

One is impressed as he reads this book with the number of economic concepts which are essentially mathematical in character whether they are expressed verbally or in symbols. If such a basic idea as demand is not presented as a functional relationship, it becomes virtually impossible to make the distinction, carefully noted by all teachers of elementary economics, between an increase in demand and an increase in the quantity demanded. Shackle doesn't attempt the distinction—" . . . if at the going price supply exceeded demand a lower price would cause a curtailment of supply and an increase of demand" (p. 23). In discussing elasticity of demand the author is scrupulously careful not to include any fractions, but he does talk about them: "For elasticity is just a ratio, and we can write it like a vulgar fraction with a numerator (the percentage change of quantity) and a denominator (the percentage change of price). When we divide the 'upstairs' part of the fraction (its numerator) by the 'downstairs' part (its denominator), and find that the latter goes exactly once into the former, it is natural to give this vulgar fraction the value of *one*, and say the elasticity it represents is *one or unity*."

In at least one place the author attempts a nonmathematical explanation of a rather sophisticated mathematical concept. He addresses himself to the question as to whether the firm's production function is "linear and homogeneous" (p. 119). With remarkable clarity he points out that within the range where the firm will actually operate, *i.e.*, where average costs are at a minimum, " . . . the *total* cost is increasing in precisely the same percentage as the total output" (p. 120). He concludes, "In short, the production function *can*

be of a character which, at the relevant output, gives constant returns to scale; and yet at the same time it can be true, because of some *essentially* 'indivisible' factor of production, that output can neither be greatly smaller nor greatly larger without a rise of average cost" (p. 121). But how clear this would be to a reader who had not cut his eye teeth on cost curves is difficult to guess.

Some of the forty chapters in this book are excellent examples of expository writing. Chapter 37 on the Balance of Payments is one of the best. Chapter 13 on "Circulation," however, is likely to convince the tired businessman that economics, even without mathematics, remains dismal. It is not likely that this book will become a best seller among the noneconomists for whom it was written. Teachers of elementary economics might, however, read it with profit. And it might prove an excellent review for students who have finished the elementary course in economics. But the principal moral to be drawn from this book is, surprisingly enough, that the serious student of economics should include in his program of study a generous sprinkling of courses in mathematics.

CLARK LEE ALLEN

Southern Illinois University

Economic Plan and Action—Recent American Developments. By CHARLTON OGBURN. New York: Harper & Brothers, 1959. Pp. xiii, 287. \$4.75.

This volume is essentially a résumé of, and commentary on, the major economic studies, reports and policy statements of the National Planning Association since 1943. The NPA materials drawn upon were concerned with some of the major economic problems and developments affecting the United States during this period, beginning with the problem of postwar full employment as envisaged during the second world war. As a result, the book deals with subjects to which economists have given a great deal of thought in recent years. The author was well prepared for his task inasmuch as he served as counsel for the NPA for fifteen years and has been a member of its Board of Trustees since 1948.

The National Planning Association is one of several privately sponsored, publicly oriented groups in the United States which have addressed themselves to important economic problems in recent years, and which have as a result of their carefully prepared and considered studies and reports on these problems contributed to better understanding and more intelligent action. The NPA studies have had wide acceptance because of the representative character of the organization's membership, the quality of its leadership, the substantial competence of its staff and outside experts who produced the studies, and the ably manned committees which gave guidance and direction to them.

The NPA studies are treated by Ogburn under the following chapter headings: (1) Full Employment Act [of 1946]; (2) Export of United States Capital—I. Dollar Gap, Private United States Investments in Foreign Countries; (3) Export of United States Capital—II. Foreign Economic Aid; (4) Export of United States Capital—III. Technical Assistance; (5) Farm Commodities Surplus; (6) Federal Budget; (7) United States Business Performance Abroad—I. The Firestone Operations in Liberia, The Standard Vacuum Oil Company Operations in Indonesia, The Casa Grace Operations in Peru;

(8) United States Business Performance Abroad—II. Creole Petroleum Corporation in Venezuela, The Philippines and the Philippine American Life Insurance Company, Sears Roebuck De Mexico, S.A., The United Fruit Company in Latin America; (9) Organized Labor; (10) Collective Bargaining; (11) The Changing Economy of the American People; (12) Productive Uses of Nuclear Energy; (13) Foreign Economic Policy; (14) Dispersal of Industry; (15) Education for Economic Development [not based on NPA studies]; (16) The Common Defense; and (17) Social Effects of Economic Development.

Among the most valuable of NPA's studies, in this reviewer's opinion, have been those dealing with the performance of American companies in less-developed countries. As the author states: "It was believed by the officials of the NPA that in making intensive studies locally of the policies and methods of a few industrial and commercial corporations, they could discover patterns which would prove valuable guides to other United States companies abroad and also to private investors; and that these studies conducted by well-known economists and sociologists would prove useful guides to the United States government, to prospective underdeveloped countries where United States investors could locate their enterprises, and also to international agencies" (pp. 81-82). Chapters 7 and 8, which deal with these studies, are among the most interesting and well written in the book. Chapter 11, summarizing the study on "The Economy of the American People" by Colm and Geiger, is also a very useful and interesting contribution.

A book of this type cannot in the nature of the case develop each of its topics in an exhaustive, scholarly and systematic manner. Sometimes, for example, one finds statements and conclusions rather than the development of ideas and theses. The book is a digest of a number of competent and useful studies with commentary, and in some cases updating by the author, rather than a systematic treatment of a given subject, or of a series of closely related subjects. The result is abbreviated treatment of a number of economic problems, not wholly integrated in presentation. Despite its title and subtitle, the book is not an organized history of recent American economic developments or policies.

Notwithstanding the limitations inherent in a work of this character, *Economic Plan and Action* will prove to be useful to the many readers who are interested in the subjects treated, but who have not had an opportunity to cover the general literature in the field, including the important NPA studies which are the basis of the book.

LAWRENCE S. DREIMAN

Chevy Chase, Maryland

Matematika dlia ekonomistov. (Mathematics for Economists.) By A. IA. BOLARSKI. MOSCOW: Gosudarstvennoie Statisticheskoe Izdatel'stvo, 1957. Pp. 367. Rbl. 8.25.

This book, by a noted Soviet statistician, is the first of its kind to be published in the USSR since the 'twenties. Its first part introduces the reader to the logic of functional relationships and to the elements of differential and

integral calculus, through partial derivatives and Simpson's rule. The remainder covers selected topics of mathematical statistics, including a well-written chapter on probability, organized around the discussion of Tchebyshev's inequality. Mathematical techniques are, as a rule, explained clearly and concisely and some illustrative examples of their applications are provided. The student's task is, however, made needlessly difficult by a complete absence of exercises.

Boiarski's pioneering effort has to be appraised against the background of the climate of opinion that until lately prevailed in Soviet economics. After a brilliant start in the 'twenties, associated with names like Slutski, Feldman, Kondratiev, mathematical economics came into disrepute. After about 1930, the use of calculus by Soviet economists was condemned as a worthless and sterile pursuit, allegedly inseparable from the two *bêtes noires* of Marxian economics: diminishing marginal returns and marginal utility. Gradually, even the use of high-school algebra came to be frowned upon. The authority of Karl Marx has often been invoked in support of this antimathematical, "qualitative" approach, without much justification. Marx held in fact that "a science reaches perfection only when it starts applying mathematical methods."¹ And the author of *Das Kapital* certainly viewed economics as a science.

Boiarski's second major topic, mathematical statistics, fared for a long time little better than calculus among Soviet economists. Its applicability to problems of a planned economy was questioned and its imminent "withering away" predicted. This view was discussed in the widely influential "Theory of Mathematical Statistics"² of which Boiarski was co-author.

Hostility breeds ignorance and authoritative spokesmen have recently complained about inadequate knowledge of mathematics among Soviet economists. Meanwhile, as the USSR's economy grew in size and complexity, the need arose for more sophisticated methods of planning and analysis than the mere 'rithmetic *cum* intuition (cf. p. 4). Boiarski's text fills to some extent an important gap in the Soviet economists' education and its appearance may be viewed as part of the current drive toward greater rationality in Soviet planning.

The rehabilitation of some of the previously outlawed mathematical techniques is undoubtedly a sign of progress. But, from there to a rehabilitation of mathematical economics, or to finding a common language with post-Cournot Western theory, there is still a long and arduous way.

The author sets himself a task that is severely limited by the still prevailing taboos. He provides the three hundred formulas, but he does so without recognizing the relationship of his analysis to Western economists' ideas or their tool-boxes. To give some examples: Functional relationships are discussed on some eighty pages without once mentioning the concept of a production or cost function. Economic applications of differential calculus, such as the concept of marginal cost, the measurement of elasticity of demand or of substitu-

¹ Related by Marx's close collaborator, Paul Lafargue, in: Institut Marksa-Engelsa-Lenina-Stalina, ed., *Vospominania o Markse i Engelse* (Recollections about Marx and Engels), Moscow 1956, p. 66.

² B. S. Iastremski and A. Ia. Boiarski, *Teoria matematicheskoi statistiki*, Moscow 1930.

tion are passed in silence. As a result, Boiarski's mathematics loses much of its economic content. The student is trained in measurement not only without theory but often without tools, and may be sorely tempted to re-invent them for himself. The temptation may become well-nigh irresistible for a student who has dabbled in the practice of economic planning: he has, one suspects, been substituting on the margin, adjusting to dimly perceived elasticities, wrestling with complementarities. . . . Why should Boiarski spare him the thrill experienced once by Molière's hero on learning that he has, throughout his life, talked in prose?

Apart from any such "Jourdain effect," by refilling their tool-boxes and labeling the tools, Boiarski would help his colleagues in their current efforts at assimilating some econometric techniques developed in the West. That the need for such help is urgent, was recognized by the Soviet editors of the 1958 Russian translation of Leontief's *Studies in the Structure of the American Economy*. They state, with some melancholy, that the lack of contact between Soviet and Western economists and "the gradual abandonment of classical international terminology" by the latter has led to a situation where "it has finally become difficult to understand each other." They then proceed to explain to the Soviet reader of Leontief's book the concept of "the so-called production function."³

While mathematics is a language, each science tends to develop a specialized vocabulary of its own. The book under review performs a signal service by introducing the Soviet student, as it were, to the grammar of that language. Let us hope, it will be followed by a conversation textbook.

LEON SMOLINSKI

Columbia University

The Income of Nations and Persons: An Introduction to Economics. By ALVIN E. COONS. Chicago: Rand McNally and Co., 1959. Pp. xvi, 672. \$6.75.

With the publication of this book another text of formidable size has been added to those available for use in introducing students to economics. The subject matter has been divided into six major parts: Part I is an introduction to economics, its scope, limits, and some basic concepts; Part II concerns national income and is essentially an introduction to macroeconomics; Part III is primarily devoted to price and output and is essentially an introduction to microeconomics; Part IV covers distribution theory or the allocation of income; Part V deals with consumer behavior and the role of consumption; and Part VI covers international trade.

Each of the six major subdivisions is in turn broken down into three subsections. The first subsection serves as an introduction of the subject, the second develops the economic analysis appropriate to the particular area, and the third describes three normative systems or alternatives under the headings "Laissez Faire," "Planned or Central Direction," and "Pragmatism."

³W. Leontief, et al., *Issledovanie struktury amerikanskoi ekonomiki*, Moscow 1958, pp. 5-6 and 4.

The student is constantly reminded that the central subject of economics is the creation and use of real income and that there are various alternative economic systems that can control the creation and distribution of this income. Economic theory is treated as a "thinking tool," a convenient frame of reference for economic analysis; and considerable attention is paid to the institutional factors which influence economic relationships in the "real" world. The author has presented a wide panoramic view of economics by weaving together theory, institutions, economic doctrine and history. Only slight use is made of charts, graphs and mathematical formulas. Basically this text is a descriptive one, and the student is not taken very far into the intricacies of economic analysis.

The literary style is clear and straightforward; most of the major subdivisions are introduced with great simplicity. By covering a wide area on a simple level, this book should appeal to those who feel the introductory course in economics should present the subject with a minimum of analytical detail.

The imperfections or shortcomings that may occur to others as well as to this reviewer concern first the organization of the book. Subjects such as money and banking, public finance, demand, and consumer behavior are scattered among several of the major subdivisions. Logical analysis is sacrificed for the simplest description of economic problem areas. Indifference curves, for example, are presented in a few brief paragraphs, in the chapter devoted to consumer behavior, along with the substitution and income effects of price changes. In an earlier chapter devoted to product markets the demand schedule and demand elasticity are described with the assistance of the marginal utility concept. The advantage of this approach is that a subject is presented quickly and simply, but the disadvantage is that the more complicated analyses are not given sufficient attention to make them fully understandable.

This book must also share the criticism earned by most elementary texts on economics. Too much is included. For the typical undergraduate student, the sheer bulk and variety of the contents, ranging from sprinkled references to major economists and their works to historical events, current institutions, philosophy, abstract models, and comparative systems, leave no area where concentration can be focused. This reviewer doubts whether economics can ever be meaningful or whether students can retain any lasting understanding of economic reasoning when given this broad aerial view of the economic terrain.

ARTHUR B. HILLABOLD

Idaho State College

The Economic System. By JOHN M. KUHLMAN and GORDON S. SKINNER. Homewood: Richard D. Irwin, 1959. Pp. xii, 509. \$6.50.

This text is intended for those who take one course in economics, presumably a semester in length. If it is used for a two-semester course, additional readings are recommended. The organization of the text is as follows: (1) methodological introduction and definitions; (2) the structure of the economy and the market; (3) labor; (4) the other factors of production; (5) national income and employment; (6) money and banking; (7) the role of government

vis-à-vis fiscal policy and the control of business; and (8) the United States in the world economy, with gestures towards what is generally called comparative economic systems.

The initial discussion of methodological problems is standard and for the most part in the neoclassical tradition with emphasis on the role of economic analysis in the dispassionate solution of economic controversy. The reviewer believes, however, that methodological excursions at the beginning of a study are not likely to be useful, and this is true of collections of definitions of concepts. All too often they do not find reference in the subsequent material. It is more useful to develop them as needed. Incidentally, although most readers are reconciled to finding in elementary texts the factors of production defined as land, labor, capital and "the entrepreneur," the appearance of form, place, possession, time and service utility brings nostalgic memories of elementary courses dominated by F. W. Taussig and Fairchild, Furniss, and Buck in the present age of Bachs and Samuelsons.

The discussion of the structure of the American economy is useful and informative for the student, but the treatment of demand and cost is much too sketchy even within the page limitations: the determination of the *level* of demand, production, the scale problem and innovations are only alluded to; and the discussion of market structure is so limited as to be primarily definitional. The empirical discussion of market behavior as an application of the theoretical analysis is more successful.

The labor section is long (71 pages), competent, and thoroughly in the dominant contemporary tradition of labor economics *cum* industrial relations: ("... the trend does seem to be towards a more mature [sic] and co-operative approach on the part of both management and labor" [p. 173]; but "... one who is 'pro-labor' or 'pro-management' as the result of emotion can make little contribution to successful public policy" [p. 223]).

The next section on the returns to the other factors of production, which begins with a discussion of capital and interest, is well organized. The loanable funds approach, which the reviewer has always found to be a useful taxonomic device for undergraduate instruction, is used with some imagination. The discussion of financial institutions is appropriately found at this point. Unfortunately too many elementary texts fail to do justice to this important topic. The discussion of rent and profits is traditional and to a considerable extent definitional; i.e., there is no particular attempt to integrate these matters with any broader treatment of the economic process.

The chapters devoted to aggregate analysis begin with an introduction to national income analysis from the point of view of the accounts and then continues with a brief statement of $C + I + G = Y$, from which the S, I relationships are derived. The introduction of interest rate considerations along with an implicit discussion of the investment schedule completes a bare-bones development of the employment model. The subsequent chapter is devoted to an analysis of money and the operation of the banking system. There is no attempt to coordinate in any detail the money with the real level of analysis.

The next group of chapters, devoted to fiscal policy and the control of business enterprise, raises many of the important issues but settles none even ten-

tatively. ("It appears quite probable that neither of these extreme viewpoints regarding the debt is accurate" [p. 364]. "Although it is improbable that the clock shall ever be turned back, it does not follow that we need look forward to a continually larger and larger area of governmental operations" [p. 428].) The authors usually take a position somewhere between two opposing positions. But most of the topics are mentioned and the descriptive material is interesting and well presented. The student will develop an awareness of the extent and complexity of governmental activities at every level, and there is a real and to some extent successful attempt to exorcise a number of the conservative hobgoblins.

The final section on America and the world economy follows the pattern established in the preceding chapters. The relevant institutional material is presented in a competent fashion; the important issues are least raised and, as in every case, moderate positions are taken.

The text leaves an over-all impression of moderateness in all things, a useful taxonomic approach to the usually defined topics in elementary economics, with no particular attempt to integrate the various issues discussed, a much better than average style, and a presentation that will make the subject matter available to the reasonably diligent student in the average state university. It leaves the instructor with all the room desired to develop his own emphasis.

LAWRENCE NABERS

University of Utah

Price and Allocation Theory; Income and Employment Theory; Related Empirical Studies; History of Economic Thought

Interest—An Historical and Analytical Study in Economics and Modern Ethics. By THOMAS F. DIVINE. Milwaukee: Marquette University Press, 1959. Pp. xvi, 254. \$7.00.

This volume is oriented to the ethics of interest on the basis of Biblical and Christian teaching. Part I (116 pages) reviews the moral teaching with respect to interest-taking as found in the Bible, in Greek and Roman thought, and in the teaching of the Catholic and Protestant Church to the present day. Part II (70 pages) presents a strictly economic analysis within the traditional framework of interest theory. In Part III (60 pages) the author relates the fundamental ethical principles of Part I to the nature of interest as developed in Part II and thus formulates his own conclusions regarding the morality of interest payments.

Father Divine brings to his study both the sympathetic understanding of a Catholic Father and the critical objectivity of a scholar. Value judgments and analysis are sharply distinguished throughout. The economic analysis of interest theory reviews familiar models in order to draw out their implications for discussion of the ethics of interest-taking. The major contribution of the book is the careful review of religious teaching provided in Part I and the thought-provoking application of this teaching to the problem of interest in Part III.

The author's basic ethical presumption is that two questions must be an-

swered favorably before the taking of interest may be judged morally acceptable. One of these questions deals with commutative justice, the other with social justice. Commutative justice concerns the relation between one individual and another; it requires that in every exchange, value given up must equal value received. The principal of the "just price" is here suggested and the problem posed is how to determine the true "value" of goods. The second aspect of justice, social justice, concerns relations between individuals and society. This includes distributive justice and a wide variety of other aspects of economic relation such as the level of employment and economic growth. If interest payments violate commutative justice, they are inherently wrong and should be proscribed forthwith. If they do not violate this standard, they are to be judged in each instance by weighing their various and often conflicting effects upon the achievement of social justice.

The Biblical objection to interest is a qualified one. In some texts it applies only to loans to the poor, or to fellow Jews. At some points objection appears to be to any act that is oppressive or ungenerous, with applicability to the exaction of interest only when it falls within that category. Similarly in the writings of the pre-Scholastic fathers of the Church "we find only reiterations of the Scriptural precepts that it is contrary to charity and mercy to exact usury of the poor, without any intimation that these precepts imply a universal prohibition" (pp. 27, 31).

Under the Scholastics, analysis changed from social to commutative justice: "the ethical consideration was shifted from consideration of the motive of the lender and the social consequences of the loan to that of the intrinsic nature of lending and borrowing" (p. 41). Aquinas' attitude was based on his general proposition that a charge could legitimately be made for the loan of durable goods but not for perishables. The logic was that if one borrows a durable good and later returns it, he will have received the services of the good in the meanwhile and may justly be asked to make appropriate payment. However, perishables offer no service beyond their consumption, and when similar goods are returned to the lender, this repayment is of equal value with the loan, as it should be. Aquinas then argued that money is a perishable good since its function is to serve as a medium of exchange, with the result that it is "consumed" when it is used. A charge for the loan of money is therefore illicit. The "just price" for the loan of a barren good is zero.

Father Divine accepts what he regards as the fundamental position underlying the policies of Aquinas, that any charge beyond a just price violates commutative justice and is inherently wrong. But he, like the Church today, uses these principles to support a contrary policy, namely, that interest for the loan of money is legitimate if the rate is not excessive. His basic problem is to find the determinant of a "just price" for borrowed funds, which he attempts to do in Part II by seeking the determinants of the market rate of interest in a competitive society. He begins with a rather detailed explanation of Fisher's theory of interest, after which he admits to his analysis the Keynesian consideration of demand for money for liquidity.

The Fisherian analysis serves at least two purposes for Father Divine. In the first place its emphasis on time preference justifies the conclusion that the

utility of a good today and that of a promise to the same good a year hence are no more equal than the utility of two different goods today. Thus a difference in price for a claim due today and one due tomorrow is quite as legitimate as that for any other exchange. The only issue is the amount of the charge. At this point, too, the theory of interest developed in Part II serves the author's objective: where there is a free and competitive market for loanable funds, competitive price will be determined. And just as the author argues that competitive price is consistent with commutative justice in the exchange of current goods, so he argues it is appropriate in the exchange of differently dated claims.

Having demonstrated his view that the payment of interest is not inherently unethical, he then examines the implications of this payment for social justice. Here the good and evil effects are weighed to determine the context in which interest payments can benefit society. Effects on distributive justice lead him to urge policies that result in more equal distribution of property. A charge for loans at competitively determined rates (modified by monetary and fiscal policy) would then seem to him to be morally justified.

Partly because the basic text was written in 1938, there are a number of ways in which both the interest theory of Part II and the discussion of ethics in Part III are not entirely satisfactory. For example, there are a number of places where confusion results from failure to distinguish between hoards and changes in hoards (pp. 170 ff), and also from the intermittent use of the liquidity preference schedule as referring to the demand for all money balances and to the demand for speculative balances. The introduction of new money to the system and of dishoarding are both referred to as "inflationary," which may contribute to the false impression that such events must cause price increases (pp. 173, 180). The discussion of Keynesian analysis does not do justice to Keynes' emphasis upon the interdependence of his system, but follows instead the narrower interpretation of his exposition (e.g., p. 184). Real balances are not discussed, with the result that unduly restricted conclusions are sometimes stated. In his preceding discussion of nonmonetary interest theory (pp. 152-66) there are a number of places where the author is either unclear or partly wrong. In his comments on Böhm-Bawerk's theory reference is made only to technical superiority (p. 163). It is later stated that the existence of interest may be explained either by time preference or by investment opportunity (p. 167), whereas the dispute between Fisher and Böhm-Bawerk over this point would seem to have been resolved in favor of the view that investment opportunity alone cannot suffice. But none of these errors lead to mistaken conclusions about the nature of interest for which the author uses his analysis.

The ethical standards underlying the study are limited to religious teaching. They do not take advantage of recent studies in welfare economics, or of the extensive associated philosophical thought on the ethics of income distribution. The statement that "there are very few who would not agree with the principle that personal services are justly rewarded in proportion to the value of the contribution of those services" (p. 227) raises a number of interesting questions. There are difficult ethical problems in recommending that those born

with the good fortune of great abilities must, *for reasons of justice*, receive financial rewards in proportion to these abilities.

While these comments suggest that other ethical standards could have been examined, this does not detract from the value of the book as a thoughtful, careful and scholarly achievement of its intended aim: the application of a long line of Church teaching to the problem of the ethics of interest in the light of an essentially valid analysis of the nature of interest.

JOSEPH W. CONARD

New York, N.Y.

A Time Series Analysis of Interindustry Demands. By KENNETH J. ARROW and MARVIN HOFFENBERG, with the assistance of HARRY MARKOWITZ and RONALD SHEPHARD. Amsterdam: North-Holland Publishing Co., 1959. Pp. viii, 292. \$7.25.

Interindustry flows of goods and services are one part—albeit an important part—of the general circular flow in the economic system. Although the circular flow has been an object of considerable interest to economists since the time of the physiocrats, little empirical content was given to the interindustry aspects until Leontief's pioneering work on input-output analysis. Essentially, input-output analysis is a simple, but empirically feasible, way of relating the demands for goods and services in their final uses to intermediate demands and demands for basic resources. Central to all applications which go beyond mere description is the prediction of intermediate demands from known or assumed final demands, or from another point of view, of the total output required of each industry given the final bill of goods and services to be produced by the economy. In econometrics, as in other spheres, it is true that something cannot be gotten for nothing; in particular, quite rigid assumptions are required in order, first, to derive the industry relations between inputs and outputs, and, second, to use the relations to make the required predictions. The assumptions basic to input-output analysis are: (a) Each industry uses each input in a *fixed* proportion to its output; i.e., if x_j is the total output of industry j and x_{ij} is the amount of output produced by industry i used by industry j , then:

$$(1) \quad x_{ij} = a_{ij}x_j, \quad i, j = 1, \dots, n,$$

where a_{ij} is the constant of proportionality. (b) The constants a_{ij} are invariant over time. This last is essential if predictions are to be made, but could be replaced by a more general assumption that the a_{ij} are known functions of other variables. The Arrow-Hoffenberg study is at once a criticism and test of the temporal invariance hypothesis and an attempt at generalization along the lines suggested.

The starting point of the authors' investigation is the observation (p. 16) that "... any assumptions that are intended to be used in applying the results of a statistical analysis to some particular use such as prediction can also be used in the estimation process and should be [so] used for maximum efficiency." If f_i is the final demand for the product of industry i (including

inventory accumulation), then the familiar balance relation of input-output analysis, which is really an accounting identity, may be written:

$$(2) \quad x_i = \sum_{j=1}^n x_{ij} + f_i, \quad i = 1, \dots, n,$$

where n is the number of industries. (2) simply states that the total output of industry i is exhausted by intermediate and final demands. Substitution of (1) in (2) yields:

$$(3) \quad x_i = \sum_{j=1}^n x_{ij}x_j + f_i, \quad i = 1, \dots, n.^1$$

If detailed data on interindustry flows, x_{ij} , and total outputs, x_j , were available over time, the hypothesis of temporal invariance could be tested directly in the context of equation (1).² Unfortunately, such data are not readily available on a comparable basis for very many years, and tests of this type are therefore rather weak. A more indirect test, but one more closely related to the use of input-output models in prediction, is to examine the forecasts of total outputs, x_i , given by solving (3) for known a_{ij} and f_i . The bulk of the tests of input-output models are of this type.³ The shortcomings of such tests are twofold: first, it is necessary to compare the predictions of the input-output model with either an arbitrary standard or another method of prediction (which, unless some very definite purpose is in mind, is also to some extent arbitrary); second, the outcomes of such tests (which have generally been unfavorable to input-output analysis) offer no route to improvement of the model. Arrow and Hofferberg propose and undertake an alternative test of the temporal invariance hypothesis. Their test is not subject to either of these shortcomings. The chief novelty of their approach is that it makes use of both time-series and cross-section data in the estimation of the input-output coefficients, a_{ij} ; its chief advantage is that it allows for temporal variation of the coefficients in response to changes in economically relevant variables, and therefore theoretically permits both a test of the temporal invariance hypothesis and an improvement of the model in the event the hypothesis fails the test.

The final model adopted by Arrow and Hofferberg relates the deviation of the input-output coefficient, a_{ij} , from its 1947 value, \bar{a}_{ij} , to the deviations from their 1947 values of real disposable income per capita, the ratio of

¹ A random component u_i may also be introduced in (3). u_i reflects the fact that equations (1) do not hold exactly and corresponds to a sum of similar components which may be introduced in these equations.

² The tests of Leontief and Cameron are of this type: see W. W. Leontief, ed., *Studies in the Structure of the American Economy*, New York 1953, Ch. 2; and B. Cameron, "The Production Function in Leontief Models," *Rev. Econ. Stud.*, 1952-53, 20 (1), no. 5, 62-69.

³ Many are reported in C. F. Christ, "A Review of Input-Output Analysis," in Conference on Research in Income and Wealth, *Input-Output Analysis: An Appraisal*, Stud. in Income and Wealth, Vol. 18, Princeton 1955, pp. 59-66. Arrow and Hofferberg (pp. 26-33) give a detailed discussion of Selma Arrow's important unpublished test.

defense outlays on goods to private gross national product, time, and the ratio of the excess of j 's highest previous peak to its current output. The last mentioned variable is treated asymmetrically in the sense that it is assumed to be zero if the excess is in fact a deficit; hence, it is intended to serve as a measure of irreversible learning effects and strain on capacity rather than the more symmetrical differences between the long and short runs encountered in cost theory. Many of the objections which may be made against the choice of these variables are raised by the authors themselves; chief among these is the one which comes most readily to mind, namely the fact that factor and product prices are not introduced as at least a partial explanation of the variation of input-output coefficients over time. To support this choice the authors argue that: (a) in the short run factor proportions do not respond to price changes; (b) the degree of aggregation, which is generally vertical in nature, reduces the possibility of substitution; and (c) some of the factors which give rise to relative price variations are partially represented by other variables. Although these arguments do not seem very conclusive, the model would become quite unwieldy were relative prices to be introduced, and this is an excellent reason for leaving them out—at least in a first attempt.

The test of the temporal invariance hypothesis proposed by Arrow and Hoffenberg can best be explained in terms of the balance relation (3). Suppose, in fact, that the input-output coefficients were constant at the 1947 levels, \bar{a}_{ij} , apart from a random element; then if the residuals:

$$(4) \quad r_i(t) = x_i(t) - \sum_{j=1}^n \bar{a}_{ij}x_j(t) - f_i(t), \quad i = 1, \dots, n,$$

are computed for known total outputs of each industry and final demands over a period of time, they too should be random and unrelated to variables of economic significance.⁴ However, if the relations indicated in the previous paragraph are correct, the $r_i(t)$ should be functions of total outputs, final demands, and the previously mentioned variables:

$$(5) \quad r_i(t) = g_i(x_1(t), \dots, x_n(t), f_i(t), \text{other variables}), \quad i = 1, \dots, n.$$

The obvious test of the temporal invariance hypothesis is thus to use time series data to fit a function relating $r_i(t)$ to final demands, total outputs and the other indicated variables. Since $r_i(t)$ is defined in terms of the 1947 input-output coefficients use is made of cross-section data for 1947, but such detailed data as would be required to compute similar input-output coefficients for other years are not needed. If the variables thus introduced have statistically significant effects, then the hypothesis of temporal invariance is rejected; on the other hand, if rejection occurs, then a way of explaining the variation of input-output coefficients over time may have been found and to that extent this shortcoming of the input-output model has been repaired.

Unfortunately, this test of the hypothesis is not as easy to carry out as it might appear. When a linear form of the relation between deviations of the input-output coefficients from their 1947 values and other variables is assumed,

⁴ In fact $r_i(t) = u_i(t)$ as defined in footnote 1.

the functions g_i are found to contain no variables which can be regarded as exogenous or predetermined. Hence, it is necessary to find sufficient predetermined variables, excluded from each equation of (5), in order to identify each one individually. The authors choose a set of 19 such variables but find them so highly intercorrelated that only 6 or 7 are really usable. Twelve are actually used in estimation due to the fact that the discovery that only a lesser number should be used occurred after extensive calculations had already been made. The estimating techniques used are closely related to those recently suggested by Theil.⁶ Although the hypothesis that the $r_i(t)$ are random is rejected in every one of the four balance equations actually estimated in this fashion,⁶ the explanation of the temporal variation is generally unsatisfactory; in particular, the hypothesis that the relations are actually identified is rejected for two of the four relations estimated and a number of the estimated input-output ratios turn out to be either implausibly large or negative at one or more points in time. The authors conclude (p. 132) that "... there is little reason to put much confidence in any relations based on the model," despite the fact that they reject the hypothesis of temporal invariance. The two conclusions might appear to be inconsistent; but in fact they are not, since any evidence of significant nonrandomness in the $r_i(t)$ is sufficient to reject the hypothesis of temporal invariance.

Besides estimating equations (5) for four sectors using additional predetermined variables, Arrow and Hoffenberg also estimate them individually by a procedure which minimizes the sum of the absolute values of the residuals. However, in this case they impose a priori restrictions on the signs and upper bounds of the input-output ratios over time. An ingenious linear programming estimation technique is developed in order to handle these restrictions which take the form of inequalities. The authors, however, recognize two difficulties with the procedure: First, it is not really possible to apply the proper sort of significance test to the results in order to accept or reject the hypothesis of temporal invariance. Second, despite the fact that the estimated input-output ratios do not and cannot take on implausible values at any time, their values are suspect due to the simultaneous nature of the relations involved.

Although formidable computational difficulties might be encountered, it would appear worthwhile to impose similar a priori restrictions on the simultaneous-equations approach which Arrow and Hoffenberg first used to estimate their model.⁷ The reason for this is simply that there are many ways of

⁶ H. Theil, *Economic Forecasts and Policy*, Amsterdam 1958, pp. 334-61. Similar techniques were developed independently by R. Basman, "A Generalized Classical Method of Linear Estimation of Coefficients in a Structural Equation," *Econometrica*, Jan. 1957, 25, 77-83.

⁷ Lumber and wood products, crude petroleum, petroleum products, and rubber products. For various reasons the temporal invariance hypothesis was not tested for the remaining 66 sectors included in the study.

⁸ If Theil's two-stage least-squares method were used, this might not prove as difficult as Arrow and Hoffenberg indicate. This is especially likely in view of the fact that practical methods of quadratic programming are now available, as they were not when Arrow and Hoffenberg did the bulk of their study.

achieving identification of economic relations other than the standard method of excluding predetermined variables from the equation to be estimated, e.g., taking account of nonlinearities or other types of constraints. The difficulties which the authors encountered in estimation were due essentially to the fact that they did not find a list of predetermined variables sufficiently independent of one another to identify the relations estimated. If the a priori restrictions had been imposed, it is conceivable that the relations would have been identified despite the smaller number of excluded variables; furthermore, the input-output ratios clearly could not be implausible at any time. In any case, the authors' negative conclusion with respect to the positive contribution of their study does not appear to be entirely justified on the basis of the evidence presented.

Econometric studies are easy to criticize on the grounds that all possibilities were not explored. This study is no exception. However, as great as the authors' resources evidently were, they were not infinite, hence, such lacunae as exist are excusable. Furthermore, more than half the volume is devoted to a detailed presentation of the basic data and the methods by which these were obtained; hence, it should be possible for others to build on their work with relative ease.

This is an important and valuable book. It is noteworthy for its useful insights into econometric techniques and the process of empirical research in economics, and this in a field the analysis of interindustry demand, in which application of statistical inference has been relatively neglected. Although the exposition is not as transparent as the material might allow, the volume should prove a useful reference in courses on econometrics and an excellent source of further investigations in the area of interindustry economics.

MARC NERLOVE

University of Minnesota

Individual Choice Behavior: A Theoretical Analysis. By R. DUNCAN LUCE.
New York: John Wiley and Sons, 1959. Pp. xii, 153. \$5.95.

Professor Luce bases the theory of behavior that he presents in this book on the following axiom. Consider a subject faced with the set U of possible alternatives. Let T be a finite subset of U from which the subject must choose an element and denote by $P_T(S)$ the probability that the element that he selects belongs to the subset S of T . Introduce also, for simplicity, the notation $P(x, y)$ for $P_{\{x, y\}}(x)$ when $x \neq y$, agreeing that $P(x, x) = \frac{1}{2}$.

Axiom. Let T be a finite subset of U such that, for every $S \subset T$, P_S is defined.

(i) If $P(x, y) \neq 0, 1$ for all $x, y \in T$, then for $R \subset S \subset T$

$$P_T(R) = P_S(R)P_T(S);$$

(ii) If $P(x, y) = 0$ for some $x, y \in T$, then for every $S \subset T$

$$P_T(S) = P_{T-\{x\}}(S - \{x\}).$$

In Chapter 1 the author discusses the meaning of this axiom, alternative formulations, immediate consequences, relationship to previous work and problems of empirical verification. The remaining chapters are devoted to

applications: Chapter 2 to psychophysics, Chapter 3 to utility theory, and Chapter 4 to learning theory. This review, written by an economist for economists, will concentrate on the contents of the first and third chapters. But it must be recognized that this procedure is unfair to Luce whose primary concern is probably for the applications of his axiom to psychophysics and to learning.

If one excludes cases of perfect discrimination, of which part (ii) of the axiom takes care, the axiom is equivalent to

$$P_S(R) = P_T(R | S) \quad \text{for } R \subset S \subset T,$$

where $P_T(R | S)$ denotes, as usual, the conditional probability of R given S relative to the probability distribution P_T . Since this axiom is sometimes misunderstood, it may be worth emphasizing that it can in no way be derived from the axioms of probability theory. One can then prove the important consequence of the axiom: under certain conditions which will not be specified here, there is on U a positive real-valued function v such that

$$P_T(x) = v(x) \left[\sum_{y \in T} v(y) \right]^{-1}$$

for every subset T of U for which (i) holds. A natural result, whose proof however requires some care in the context chosen by the author. This result, in turn, implies the existence of a Fechnerian scale on U , i.e., a real-valued function u on U such that, for $P(x, y) \neq 0$ or 1 , $P(x, y)$ is a function of $u(x) - u(y)$ only. It suffices to take $u = a \log v + b$. Aside from this, the most interesting fact, among those listed by Luce in the applications to psychophysics, may be the following for the readers of this review. Imagine that, to rank the elements of a finite set U , the subject decides first which of all the alternatives is superior, secondly which of the remaining alternatives is superior, etc. One obtains in this way a probability distribution over all the possible rankings. Imagine now that the subject selects in a set T of alternatives the *inferior* element, that those choices can be described by probability distributions P_T^* satisfying the axiom, and that to rank the elements of the same set U he decides first which of all the alternatives is inferior, second which of the remaining alternatives is inferior, etc. Assume moreover that the two families of distributions $\{P_T\}$ and $\{P_T^*\}$ are related by equalities such as $P(x, y) = P^*(y, x)$. The probability distribution of rankings obtained in the second way is generally *different* from the distribution obtained in the first. In this light, the principle that a subject ranks the elements of a finite set in the same fashion whether he considers them from superior to inferior or from inferior to superior is inconsistent with the axiom.

Chapter 3 on utility theory is a study of decomposable preference structures. Let A be the set of pure alternatives and E the set of chance events. The symbol $a\rho b$, where $a, b \in A$ and $\rho \in E$, is the uncertain alternative where a is the outcome if ρ occurs and b is the outcome if ρ does not occur. In addition to the probability measures P_T introduced so far for the sets T of uncertain or pure alternatives, probability measures Q_D are introduced now for the sub-

sets D of E to describe the probability that an element of D is thought by the subject to be the most likely to occur. The axiom is assumed to hold for the family $\{P_F\}$ and for the family $\{Q_D\}$. Finally the preference structure is said to be decomposable if:

$$P(apb, a\sigma b) = P(a, b)Q(\rho, \sigma) + P(b, a)Q(\sigma, \rho), \text{ for } a, b \in A \text{ and } \rho, \sigma \in E.$$

The rationalization is that apb will be preferred to $a\sigma b$ if and only if (1) a is preferred to b and ρ is considered more likely than σ , or (2) b is preferred to a and σ is considered more likely than ρ . The main result concerns the equivalence relation \sim defined on E by " $\rho \sim \sigma$ if and only if $Q(\rho, \sigma) = 1/2$ "; it states that if there exist $a, b \in A$ such that $P(a, b) \neq 0, 1/2$ or 1 (i.e., if discrimination among pure alternatives is not perfect), then the relation \sim partitions E into, at most, three equivalence classes.

These considerations suffice to show the strong consequences that can be derived from Luce's axiom. I may add an example to illustrate another difficulty which seems to severely restrict the applicability of that axiom. Let the set U have the following three elements:

D_C , a recording of the Debussy quartet by the C quartet,

B_F , a recording of the eighth symphony of Beethoven by the B orchestra conducted by F,

B_K , a recording of the eighth symphony of Beethoven by the B orchestra conducted by K,

The subject will be presented with a subset of U , will be asked to choose an element in that subset, and will listen to the recording he has chosen. When presented with $\{D_C, B_F\}$ he chooses D_C with probability $3/5$. When presented with $\{B_F, B_K\}$ he chooses B_F with probability $1/2$. When presented with $\{D_C, B_K\}$ he chooses D_C with probability $3/5$. What happens if he is presented with $\{D_C, B_F, B_K\}$? According to the axiom, he must choose D_C with probability $3/7$. Thus if he can choose between D_C and B_F , he would rather have Debussy. However if he can choose between D_C, B_F , and B_K , while being indifferent between B_F and B_K , he would rather have Beethoven. To meet this difficulty one might say that the alternatives have not been properly defined. But how far can one go in the direction of redefining the alternatives to suit the axiom without transforming the latter into a useless tautology?

Yet, even if economists think that this axiom is implausible in the choice situations that they study, this book will interest them in several ways. In particular its emphasis on the conceptual and experimental difficulties associated with any theory of choice, and its constant concern for empirical verification deserve the attention of our profession.

GERARD DEBREU

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The Failure of the "New Economics." By HENRY HAZLITT. Princeton: D. Van Nostrand Co., 1959. Pp. xii, 458. \$7.50.

In this volume, subtitled "An Analysis of the Keynesian Fallacies," Hazlitt has "analyzed Keynes's *General Theory* . . . theorem by theorem, chapter by

chapter, and sometimes even sentence by sentence." Such a task could have been worth while, for the *General Theory* is far from perfect. Its style is difficult, its definitions often ambiguous, statements of fact are often unsupported, and many of its observations badly integrated into the body of thought. It is, furthermore, riddled with a contempt for free markets and their results. All this is pointed out by Hazlitt, down to such minor items as the misquotation of Voltaire ("it was not Candide who was the incurable optimist, but Pangloss.")

On the whole, however, Hazlitt does little to improve matters. Witness, for example, his condemnation of Keynes's style: "It is largely on such pretentious pleonasms and circumlocutions that Keynes's reputation for profundity seems to rest." His attempt to clear up certain ambiguities in definition is no more successful. On the question whether saving equals investment, surely no great gain is achieved by taking together the definitions of the *Treatise on Money* and those of the *General Theory* as equally good indications of Keynes's thought. A clearer understanding of the latter definitions would have made it obvious that although saving equals investment, attempts to save are bad and attempts to invest are good under conditions of less than full employment. Nor is the matter clarified by Hazlitt's acceptance of Say's law in its crudest and most objectionable form, that all savings are invested.

Hazlitt properly objects that the *General Theory* is quite special, applying only to conditions of unemployment. Yet he ignores this speciality repeatedly, accusing Keynes of error and proving the error by the assumption of relatively full employment. Thus Hazlitt proves that interest rates cannot be held below the natural rate by monetary policy because rising prices would force interest rates back up. Again, he objects that government spending might only encourage unions with excessive wage rates to demand even higher wages and the new spending may even lead to a decrease in employment. (Even under full employment this last conclusion would be justified only with rather strangely shaped labor-supply curves.)

On its statements of fact, Hazlitt's book is somewhat better documented than Keynes's, but could have used much more. As a rebuttal of Keynes, however, the documentation is grossly unfair; it takes Keynes to task because his statements do not correspond to the data of the last twenty years. Said Keynes: "workers do not bargain for real wages." Says Hazlitt: "As of January, 1958, more than 4 million workers . . . had insisted on, and secured, contracts providing for automatic wage increases with increases in the cost of living." Said Keynes: "Ice company stocks are higher in summer than in winter." Says Hazlitt: "From 1932 to 1956 . . . the shares of these companies sold higher in summer than in winter only . . . about as often as a penny might come heads instead of tails." (He then admits that these are also fuel companies, so the proof is ambiguous.) When Keynes criticizes the disorderly behavior of the American stock market, Hazlitt emphasizes its orderly character, neglecting to mention the changes in government regulation and the rules of the exchange which took place in the early 'thirties.

Hazlitt opposes the use of mathematical formulations on the ground that economic relations are not sufficiently precise to permit their use. This is

hardly an answer, for good verbal economics should be precise as well. Surely the initial mathematical formulations by Keynes have had a tremendous impact upon attempts to make these relationships more precise by more sophisticated techniques. The important question is not about perfection, but whether the approximation is sufficiently accurate to add anything to our understanding.

Hazlitt's attack on aggregation is similar. Because many interesting factors depend on the details, the use of totals and aggregates is impossible. Again, the question is whether any useful contribution is made by aggregate analysis, not whether it is the only useful kind.

It is in the discussion of depressions and their cure that the biases of Keynes and Hazlitt clash head-on, with sound and fury signifying nothing. Hazlitt continually emphasizes the general equilibrium character of society, with thousands of prices and wages. Depressions are caused by "prolonged maladjustment between prices of different commodities, or between individual wage-rates, or most often between prices and wage-rates." But in answer to Keynes's suggestion of increasing demand or prices, Hazlitt answers that employment could much more easily be brought about by cutting wages. (This is in keeping with his repeated assertion that depressions are primarily attributable to unreasonable wage demands by labor unions, certainly a strange explanation for most of the history of cycles.) Hazlitt never recognizes that, although relative prices must reflect the market, the general level of all prices is essentially arbitrary. Whether maladjustments between prices and wages should be cured by raising prices or lowering wages must depend upon the number of obstacles to each of these policies and the dislocations in the relative price structure incumbent on each. Even if unions are to blame, condemning them for their intransigence does not cure the problem. In any case, invective, whether Hazlitt's or Keynes's, is no substitute for reasoning.

Although Hazlitt clears up many minor points in the *General Theory*, his analysis of the major ones is completely unsatisfactory. In short, those who agree with Hazlitt's preconceptions will find many excuses for their views; those seeking enlightenment must look elsewhere.

JOSEPH P. MCKENNA

Saint Louis University

Social Accounting and Economic Models. By RICHARD STONE and GIOVANNA CROFT-MURRAY. London: Bowes and Bowes, 1959. Pp. 88. 9s 6d.

It is the stated objective of this book "to present a brief description of social accounting, including the input-output table, together with an introduction to economic model building." This objective is emphasized in the title of the volume, with its juxtaposition of social accounting and economic models. This theme is carried out by a concise discussion of the nature of social accounts which leads to a discussion of an input-output matrix. From there the progression is easy to input-output models, the uses and limitations of which are succinctly reviewed. A final chapter discusses models of consumers' behavior with examples drawn from econometric studies of consumers' purchases of food, motor cars, etc., in the United Kingdom. The models discussed rely both

on aggregate statistics and on cross-section data. The latter are used especially in estimates of the income elasticity of demand. To the reviewer it would have seemed more appropriate to devote the final chapter to models of the type described by Klein and Goldberger, which depend on the national accounts as systems of economic reporting in a sense in which the partial models of consumer behavior do not. But it cannot be denied that the latter do make frequent use of statistics from the accounts, such as measures of disposable income and total consumers' expenditures.

The authors also state in the foreword a more general point of view, that "theorizing is a visionary activity whose aim should be to propose a mathematical order which will fit reality." They emphasize the importance both of setting up theoretical models of how the economy works and of testing them empirically. The entire volume may be regarded as illustrating what they mean by this approach. The reviewer is in full sympathy with this general position, though he suspects that many economists would not put as much stress on empirical work. He is also in full sympathy with the proposition that the connection between the national accounts and economic models deserves more attention than it has received. There should be frequent communication between the economists who develop the accounts and those who use them in economic models.

The volume under review is not an advanced treatise and does not attempt to cover new ground. The book is not intended for use as a text but might prove a useful addition to reading lists. It requires of the reader a general knowledge of economics such as might be expected of an advanced undergraduate who has had a year or so of statistics. Some use is made of matrix algebra, though a large part of the discussion can be followed without that background. Students may find the discussion of input-output analysis particularly helpful. They will also find the volume a useful introduction to the work of the group of research economists at Cambridge. There is a bibliography which would be especially helpful for this purpose.

This book is of interest for another reason. The authors had more to say than could be compressed into an article in a journal. Instead of expanding their manuscript to the usual 400 or 500 pages, they chose to write in a clear but compact style which fills a grand total of 88 pages. May other authors and publishers follow this example!

JOHN B. LANSING

University of Michigan

The Keynesian Theory of Economic Development. By KENNETH K. KURIHARA. New York: Columbia University Press, 1959. Pp. 219. \$5.50.

The impression of this book one would gain by turning the pages and reading the index is by and large correct. Extreme use is made by Professor Kurihara of definitional manipulation of essentially an $MV = PT$ sort; an exploration of logical possibilities appears to obviate, in Kurihara's estimation, the need for data; the variables that are presumed to be potentially under the control of government are many in number and unusually wide in range. Roughly one-third of the text consists of articles and notes Kurihara has

published previously elsewhere. Economists who are mentioned in text or footnote at least as often as Kurihara himself are Domar, Harrod, Keynes, and Joan Robinson; in contrast, economists such as Chenery, Friedman, Samuelson, Solow, and Tinbergen are not referred to at all in the text.

Many students will nevertheless, find this book useful because several variants and extensions of simple Harrod-Domar type growth models are spelled out. Other students will find appealing the somewhat bland assertion that "models of *laissez-faire* growth have the negative virtue of demonstrating how precarious and unfruitful it is to leave the secular growth of an economy to the vagaries of private saving and investment, to the accident of profit-motivated inventions and innovations, and to the working of unguided market forces" (p. 185). Most economists, however, will be disappointed to find that Kurihara has devoted his energies to, and that a university press has spent resources on, what is at best a narrow and oversimplified treatment of growth processes. Of this sort of analysis we already have a great deal, while growth models which are empirically relevant or which incorporate political variables are in short supply.

As for organization and content, after three introductory chapters (one describing briefly some older theories; one describing some important characteristics of underdeveloped countries; one stating some requirements that a "desirable" growth pattern might satisfy), Kurihara deals in turn with capital accumulation, technological change, unemployment, income redistribution, monetary and fiscal manipulation, and foreign trade, all in the setting of an underdeveloped economy. The first of these later chapters reviews and comments on models initially spelled out by Harrod, Domar and Joan Robinson while the rest consist largely of articles previously published by Kurihara. As already suggested, Kurihara is convinced that underdeveloped economies must and should marshal the power of central government to control consumption, investment, foreign trade, and possibly population. In support of this view he has collected (and modified) stock arguments against the use of *laissez-faire* control devices; e.g., he points to infant industries, external economies, demonstration effects, redundant labor. He is aware that Harrod-Domar-type models depend critically on special technological assumptions but, in spite of this, policy prescriptions are couched entirely in aggregate terms. Presumably, Kurihara does not wish to indulge "in the luxury of disaggregation" or "apply rather mechanically the classical allocation principle to a situation that calls for economic organization and planning along macroeconomic lines" (p. 200).

Kurihara's writing style is reasonably clear (exception: "an economy may be underdeveloped, not necessarily because its propensity to procreate is too strong relative to its capacity to produce, but possibly because its capacity to produce is too weak relative to its propensity to procreate" p. 27), but he often elaborates the obvious while imposing a burden on the reader to remember definitions. For example, "denoting $\Delta Y/Y$ by G_n , equation (4) can be reformulated as

$$G_n = \frac{\theta}{a_n/(1 + g_n)}."$$

Now N is the labor force and Y is the (maximum) associated output while v is $\Delta N/Y$, a_0 is the initial value of $\Delta N/\Delta Y$, and g_a is a constant. Hence, Kurihara has taken a definition, added the assumptions that v is a constant while a decreases over time, and thus demonstrated "that the rate of growth of full-employment output is capable of increasing in inverse proportion as the labor-output ratio decreases over time" (p. 84).

JOHN BUTTRICK

University of Minnesota

Probleme und Ansätze einer kapazitätsorientierten Investitionspolitik. By DETLEF LORENZ. Berlin: Duncker & Humblot, 1958. Pp. 158. DM 13.80.

The main body of this study is devoted to a clarifying survey of the German and English literature on anticyclical and noncyclical investment theory. The first part deals with micro- and macro-investment theories in general; the second part examines special problems of a capacity—rather than income—oriented investment theory; the third part infers political conclusions from the theories evaluated.

In regard to public investment, the author insists that we should analyze all forms of investment by governments. Yet his classification into anticyclical, economic and fiscal as well as political and military is hardly fruitful. The thesis that anticyclical decisions are demand-oriented, while "economic" investments depend upon the supply of available capital, is not developed. There is especially no explanation as to why the supply of public capacity usually lags behind the demand for public facilities. The criteria for "political" investments are examined in terms of the theory of cumulative interventionism, producing a value judgment rather than a theory. One surmises that the attempted comprehensive theory of public investments would have been more successful if the analysis had aimed at a theory of the public sector of the economy.

In his examination of the various theories, the author sides with those who rejects the thesis of a *general* tendency towards underinvestment. Industries are divided into four groups according to their investment criteria. Immediate consumption demand rises with income, which increase provides an effective criterion for private investment. Industries with a rising demand due to population increase experience a lag in the provision of additional capacity. Industries affected by technological progress benefit from a neutral capacity effect since capacity increases simultaneously with demand because of price reductions. It is only in the strictly durable goods industries that there are cyclical fluctuations in demand and supply of capacity. Rather than having to commit itself to a general anticyclical investment policy, the government does not need to concern itself with the demand for immediate consumer goods. In cases of technological improvement, the government should urge producers to reduce prices promptly and sufficiently. Industries directly affected by population increases could be assisted in providing reserve capacity. Only in durable goods industries is there a possible place for anticyclical policy of public investment.

Yet the author seems almost convinced that even for the durables there

are efficient compensatory factors originating in private concerns. With a few qualifications he accepts the recently developed thesis that industrial empires have the capacity to engage in a noncyclical investment policy, thereby drastically reducing the amplitude of cyclical fluctuations. The function of the government is then limited to providing statistical information indicating the socially desirable capacity. In most cases demand and supply of capacity would thus be equated through internal business planning and external counseling of private decision-makers by the government.

This happy solution hinges upon an idealization of big business. One can agree with the author that the activities of industrial empires cannot be explained in terms of the traditional theory of restrictive monopoly. Rather than calling the massive firms competitive, we have to place them in their category as a concentrated property structure: concerns that receive interest-free capital through retained profits, benefit from preferential treatment in capital markets, own a multitude of plants, produce an endless number of products, enjoy special access to innovations, monopolize and divide investment opportunities among themselves. The very size of assets leads to the building up of exclusive, expansive or cooperative monopolies. A theory of these monopolies alone can ascertain why and how the monopoly effect leads to an insufficient capacity, or the acquisitive drive for more assets to an excess of capacity supplied by industrial empires.

ARTHUR SCHWEITZER

Indiana University

Der Lagerzyklus—Lagerbewegung und Konjunkturverlauf in empirischer Sicht. By HARRY SCHIMMLER. Berlin: Duncker & Humboldt, 1958. Pp. 113. DM 12.—.

The author examined the quarterly inventory series for Western Germany from the middle of 1949 to the middle of 1955 with a view to explaining the time-path of inventories as the sum of a desired and an undesired component. The magnitude analyzed is the inventory ratio B/N , where B denotes inventories and N the "total effective demand," which is largely identical with our GNP series. The desired change in inventories (L^*) is considered approximately proportional to N , except for the price influences:

$$L^*/N = \gamma + P''$$

By some involved consideration to which we shall return presently, the change of the undesired inventories U is given by the equation:

$$(1) \quad \Delta(\Delta U) = -\lambda U - \epsilon \Delta U$$

where λ and ϵ are reaction coefficients. They are both found equal .25; γ slowly varies from .3109 in the second quarter 1950 to .3296 in the last quarter 1953, and then falls to .3243 in the second quarter 1955; the price effect is very small.

The behavior functions governing the change in U are formulated as fol-

lows (p. 43): (a) The desired inventory change equals the change in the desired inventory minus the undesired inventory: $L^* = \Delta G - U$ (as consequence of a misprint we read on p. 43 L in place of L^*). (b) The firms want to compensate the undesired change (R) of the inventory [which has been shown, on the basis of (1) to equal $U + \Delta U$] or, in a sufficiently short period, a fraction of it, yielding equation (1) right side, above.

I am unable to follow this argument as to (b). First, it is not clear, a priori, why firms should orient their production decisions to the undesired change in inventory and not exclusively toward the level of the undesired inventory; nor is Schimmler's econometric method adequate statistically to confirm this hypothesis. Even more important is the point that the two assumptions (a) and (b) are not consistent: According to (a) the firm, during period $t + 1$ tries to eliminate U in full; in (b) a different attitude is assumed. It is only by cumulating these inconsistent assumptions that Schimmler is able to derive equation (1)—a difference equation of second order in U ; is it reasonable to assume that the time-path of undesired inventories is independent of the path of the desired ones, which are governed by the total effective demand? In the special chapter contributed by Klement a complete, though still simplified, model is developed covering also consumption and induced investment, and leading to a differential equation of the third order in *income*. On the basis of the available material the evaluation of the coefficients in Klement's model is not possible, and this may have induced Schimmler to look for a simpler approach.

However, it is important to notice that Schimmler's results for the desired inventories (the coefficient γ and the absolute size of the desired and undesired inventories) are acceptable even if his approach concerning the coefficients γ and ϵ is rejected. His coefficient γ (in the estimate of which the data for 1949 were disregarded) fluctuates very little, and the fluctuations in γ are not indicative of the type of nonlinear relation between inventories and sales which Whitin and others have suggested and to which Schimmler himself refers in one place (pp. 55-56). If it is agreed that the desired inventories are approximately proportionate to the total effective demand, then the usual correlation analysis would also have yielded a value approximately equal to .32.

Schimmler also presents a comprehensive model of the economy which covers consumption, investment and autonomous factors. It is of an econometric nature, i.e. it is not reducible to a difference equation in one variable. Schimmler examines briefly the other coefficients of this model as they appear retrospectively if the available data for the variables are inserted period by period. I cannot agree with him that the "structure of demand" n (which equals $1/(1 - \alpha)$, where α is the average propensity to consume in the widest sense including depreciation, etc.) has proved rather stable for 1949-55 or 1950-55; in 1950 it was 2.32 and in 1956 equal to 1.91. Of greater interest are his attempts to estimate for this period the "capital coefficient" β (the Hicksian v) and the "capacity coefficient" which indicates the influence of existing unutilized capacity on the willingness to invest. It would take considerable

space to describe the estimation procedure; suffice it to say that in spite of the inevitable crudeness of method Schimmler has in the reviewer's opinion here obtained useful results.

HARIS NEISSER

New School for Social Research

The Economic Mind in American Civilization 1918-1933. By JOSEPH DORFMAN. Volumes 4 and 5. New York: Viking Press, 1959. Pp. xxxiv, 398; liv, 375. \$12.50.

With these two volumes, Professor Dorfman brings to a close his massive work on the development of economic ideas in this country. Volumes 1 and 2 covered the period from colonial times to the Civil War; Volume 3 brought the story up through the first world war, and the present volumes span the years 1918-1933. Here it ends, partly because the subsequent years are too close for the historian's perspective and because, as the author sees it, the main ideas of the New Deal era are worked out in the period covered by these two volumes.

The five volumes taken together are the product of prodigious scholarship, and they illuminate a neglected aspect of the history of economic thought. In general the standard histories give scant attention to U.S. economic thought, although both Schumpeter and Hutchison analyze in detail a few U.S. economists. Those few works that are devoted to U.S. economic thought, such as E. A. J. Johnson's, E. Teilhac's, and A. G. Gruchy's, have limited coverage, namely the 17th century, the 19th century, and Institutionalism. Both Teilhac and Gruchy give a detailed account of relatively few authors. O'Connor's study of the academic origins of the subject is largely concerned with teaching materials, not doctrinal developments. For breadth and coverage, *The Economic Mind in American Civilization* has no rival.

Following the pattern of the earlier volumes, Dorfman goes well beyond the confines of academic economics for the period 1918-1933. This is a study of economic ideas, quite broadly interpreted, as they are influenced by developments in sociology, philosophy, psychology, industrial management, and public policy. The sources cited indicate the "public" character of the ideas reviewed—congressional hearings, liberal magazines such as the *New Republic*, messages and speeches of public figures, reports and pamphlets, and popular books on current issues. These sources liberally supplement the professional journals, texts, and other works of the academic economists. The spectrum of ideas and interests is wide; analytical economics occupies a rather narrow band.

The material in these volumes is organized in two parts: *The Era of Adjustment and Progress, 1918-1929*, and *The Great Depression 1929-1933*. Three-fourths of the combined two volumes concerns adjustment and progress following the first world war. Adjustment embraces the period of reconversion and the depression of 1920-21, and progress covers the years from 1922 to the crash of 1929. Dorfman meticulously reviews the ideas of both amateurs and professionals on the innumerable practical problems of readjustment and the subsequent prosperity. Unemployment, the planning of public works

(with the germ of the multiplier), social insurance, industrial relations, monopoly, agricultural "adjustment," Federal Reserve policy and stabilization, the business cycle, banking reform, stock market speculation, and economic planning are among the problems extensively covered.

The author gives every man his day in court; as a consequence the reader finds himself going through the same ideas over and over again. Such repetition is unavoidable, given the person-by-person treatment in this work. However, the inclusion of some of the persons and the distribution of emphasis puzzle this reviewer. Three pages are given to the socialist views of Steinmetz, the electrical engineer, but there is only passing reference to Norman Thomas. E. H. Downey gets five pages on his workmen's compensation ideas, and Rubinow has seven pages on social insurance. These ideas recur again and again. There are too many quotations from too many writers on too many diverse subjects. But occasionally a quotation is prophetic and succinct, as this one from a Coolidge message vetoing the McNary-Haugen bill: "Government price-fixing, once started, has alike no justice and no end."

Dorfman, of course, devotes most of this work to the professional economists. Analytical contributions are subordinated to policy views and to the positions taken on the scope and method of economics. This is in keeping with his purpose: to portray the "economic mind," or the outlook on socio-economic problems and policy, rather than techniques. There are excellent briefs on such figures as J. M. Clark, W. C. Mitchell, Walton Hamilton, F. H. Knight, and Jacob Viner, and shorter accounts of Copeland, Douglas, Tugwell, Slichter, and many others. The positions of the elders of the period—Taussig, Ely, Young, Bullock, J. B. Clark, Fisher, Seligman—are given sympathetic discussion. Brief references are made to the influence of foreign economists, particularly Keynes and briefly Marshall. Strangely, to Cassel is attributed a "substantial role in stimulating interest in the study of price determination and in neoclassical economics as a whole" (p. 165).

Dorfman seeks to show the profound changes in the outlook of economics brought about by the "new" generation of economists. J. M. Clark is in the forefront of this broadening and humanizing movement. Industrialization, the concentration of economic power, the social problems of an urban civilization, labor relations, the plight of agriculture, and recurring depressions cause problems and bring to the fore the need for social control, group responsibility, and the preservation of individualism. The emphasis is on "problems," and economists increasingly move towards specialization in efforts to find solutions to these problems. As Dorfman sees it, the main trend is in the spirit of institutionalism and reform. The author skillfully arrays his materials to bring out the main currents, and through copious quotations gives his subjects ample opportunity to make their points.

Looking back on the era of adjustment and progress, Dorfman seems satisfied with the results. Progress had been made in the delineation of problems, in pointing to solutions, in the gathering of statistical materials, and in the research directions taken. Economics had gained enormously from its assimilation of ideas and approaches from psychology, philosophy, sociology, and administration. Economists were in the thick of things, advising govern-

ment, business, labor unions, and the public at large. In his chapter "The Legacy of the 'Twenties'" he said "As the period closed, the economics profession showed a deep faith in the ability of American capitalism to achieve material and social progress." Yet they showed little awareness of what was to come. The "outsiders," Foster and Catchings, were more perspicacious.

Part II, the Great Depression, is discouraging. Dorfman marshalls the best thought of the period in these fascinating chapters. Academic economists fare badly in this review—confused, bewildered, uncertain, and quarrelsome. In this context, policy prescriptions come largely from the amateurs. Dorfman suggests a reason: "In the vast and complex American economic order, with its diversity of interests, one policy could hardly have been expected to be adequate and acceptable to all. The statesmanship required was not novel; it was essentially the ability to assess a multiplicity of diverse remedial measures and to weave them together into a workable over-all program. Why, then, was this so difficult to do? A substantial part of the answer lies in an undue lag, deriving from the 1920's, between the needs of a dynamic economy and public policy . . . ; and closely related, the failure to define clearly and to readjust the relationships between government and the economic system." In the failure of the professional economists to assess and to weave together the widely proposed remedial measures lies their inadequacy in this period.

Dorfman generously ascribes this failure to the complexity of the problem. But to this reviewer there is a more basic reason. Specialization, the preoccupation with particular "problems" and their reform, and the emphasis on social philosophy, method, and approach diverted the attention of economists from the economy as a whole and its basic processes and functions. In the early 1930's they wrangled over the bits and pieces, because this is what they had been doing throughout the 1920's—as this monumental work of Dorfman's so adequately brings out.

ARTHUR E. BURNS

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A History of Economic Ideas. By ROBERT LEKACHMAN. New York: Harper and Brothers, 1959. Pp. xiii, 427. \$5.00.

Of the seventeen chapters in this text, six are devoted to a description of the classical school (Part II). In Part III, the marginalists are allocated two chapters followed by a brief chapter on the *Methodenstreit* and a chapter on institutional economics, the latter being essentially a quick run-down on Veblen's criticism of marginalism. Part IV takes up the modern period, with individual chapters on Keynes, business cycle theory, price theory of the Chamberlin-Hicks variety, and a hodgepodge titled "The Analysis of Capitalism." The latter runs all over the lot, from an outline of Schumpeter's prognosis, to Pigou's welfare analysis, to the Lange-Lerner-Dobb debates of the 1930's. Greek, Roman and medieval theory, as well as the mercantilists, are treated in the first three chapters (Part I). Nothing is discussed in any detail and the reader has the feeling that the author is ticking off the great names of economics without really giving any of them a chance to explain his position.

Smith, Bentham, Malthus, Ricardo, J. S. Mill, Marx, and Keynes each receive the dignity of a whole chapter, while all other writers receive a "Who's Who" treatment. The reviewer noted a total of 53 economists who were given separate billing, with anything from a chapter to a few lines summing up their contributions. The heavy emphasis upon the classical school is explained by the author thusly, "Economics does its job best and commands most respect when economists concern themselves with the problems which afflict ordinary human beings." Since, in his opinion, the classical writers dealt with real issues, as did Keynes, his preference and prejudices led him to stress their contributions, rather than those of writers who have merely engaged in "intellectual gamesmanship" (p. xii).

While few can deny that the economics profession harbors many writers who follow the tenets of Stephen Potter, it would seem that Lekachman should have supplied the reader with some criterion by which to judge when economists are engaged in gamesmanship and when their endeavors are worth while. For example, was the development of the concept of elasticity, or of consumers surplus, merely a Marshallian ploy? Lekachman's implicit criticism of a good deal of formal economics is testimony to the fact that he really has no sympathy for the essential problem of theory *qua* theory. What this means is that the author really is not interested in discussing the subject matter of economics. Even the influence of the sage, Adam Smith, was dependent upon his conceptualization of the problems of 18th century England, rather than his recognition that they existed. Lekachman does not seem to realize that what marks the contribution of an economist is not only the issue he chooses to discuss, but the theoretical analysis he develops to deal with the issue.

As might be expected, Lekachman's approach is one which stresses the historical background that gave rise to such ideas as Ricardo's profit, and Malthus' *Essay on Population*. This approach is old hat, and the discussion does not throw any new light on the relation between the development of theory and its historical origins. Lekachman also devotes considerable space to the private lives of the great, and while undergraduates perhaps appreciate a peek into these corners, it seems that the space devoted to discussing the domestic affairs of, say, Marx and Ricardo could be better allocated to more detail on their respective systems of analysis.

In large part this volume reflects the dilemma of a shrinking, but courageous, corps of economists who cling to the idea that it is desirable to offer an undergraduate course in the history of economic thought. The reviewer hastens to add that he includes himself as a member of this minority. However, with expanding curricula not many institutions can devote more than a semester to an undergraduate course in the history of thought. Lekachman's volume, apparently, adheres to the idea that under these restraints it is best to cultivate extensively and to cover as much territory in the history of ideas as possible. His volume, for example, runs the gauntlet, in 400 pages, from Plato to Hicks' *Value and Capital*. In contrast, it took Schumpeter 1200 pages to go over the same area, and his work was published on large sheets with small print!

Lekachman's volume raises serious question as to the usefulness of a canvas which has been painted with such large and uneven strokes. The major criticism, therefore, rests on the fact that Lekachman, in applying the law of scarcity, has sacrificed depth for breadth. For the undergraduate, it would seem that Jevons, Menger and Walras are near perfect substitutes for one another, and that J. S. Mill, Fisher and Xenophon could easily be classed as inferior goods. Is it not more desirable to allocate the scarce teaching time, as well as the printed page, to dealing with a few representative writers from whom the student can gain some appreciation for the difficulties in the growth of economic theory, and for the relation of theory to the issues which gave rise to it? Textbooks like the one under review, wherein the discussion changes the subject every page, only tend to give the student a "quiz program" familiarity with the great minds in economic thought; and it is to be hoped that education in this country has advanced beyond this pitiful stage.

JOHN P. HENDERSON

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Economics of the Business Firm—Economics of Decision Making in the Business Enterprise. By JOSEPH D. COPPOCK. New York: McGraw-Hill, 1959. Pp. xiii, 366. \$6.95.

It is sometimes argued that there is a wide gulf between economics and business, that while economic analysis offers much by way of explanation of how our economic system operates, it has little practical value for actual or potential business administrators. Coppock feels differently. He believes that the tools of marginal analysis as presented at the intermediate level are much more than a logical exercise or a guide for public policy makers. To him they are indispensable theories for "the businessman who seeks to make profitable decisions."

Since the book is written primarily for business school students, one might think it would be a popularized Joel Dean. It is not. Instead it is almost entirely a series of lessons in formal logic, very carefully written to demonstrate step by step the abstract mechanics of profit maximization within the mathematical limits of two- or three-dimensional geometry. In fact, one gets more than half way through the volume before finding anything beyond formal models of maximum, minimum, and equilibrium situations encountered by the firm. Even the price discrimination cases are presented in the abstract without enrichment by illustrations from real life. This approach may appeal to some teachers, particularly those who like to keep their illustrative material up to date by using current articles, reports, and documents. Others may find it too dry and lacking in student interest.

It is not until Coppock takes up his nine models of commodity markets (based on combinations of one, few, and many buyers or sellers) that he lets himself relax enough to make a few comments on such things as the collusive ways of oligopolists and the problems of polyopsonist consumers. In a later chapter he uses a similar ninefold path to the analysis of the markets for factor services and again turns slightly institutionalist. A concluding

chapter of only eight pages is devoted to the applicability of marginal analysis to the real problems of business firms. In it he briefly refutes the usual objections to the applicability of the analysis because of the existence of the following complications: multiple products and multiple inputs, inadequate knowledge of demand and cost functions, the lumpiness of certain inputs, uncertainty, variations in market structure, and the operation of nonprofit motives.

Like most writers of texts, the author does not strive to contribute new ideas as much as improved presentations. Among the latter the reviewer was impressed by the consistent symmetry of approach in treating a large number of demand and supply concepts for both commodity and factor markets, though with some skimping on the latter. Coppock also stresses the need to consider the state of the other side of the market in explaining how one arrives at a true supply curve or demand curve. For instance, only when the opposing demand curve is horizontal do the marginal cost curve of a firm or the "marginal withholding curve" of a factor-owner become true supply curves. Similarly, only when the opposing supply curve is horizontal do the marginal factor revenue curve of the firm as demander and the marginal benefit curve of the consumer become true demand curves. The reviewer would also commend the insights of Chapter 17 which is devoted to methods and problems of estimating demand. For those who like a text with end-of-chapter questions and references, Coppock offers an abundant supply of the former, both memory and thought types. The supplementary readings are more scanty, confined to books, and generally without annotation. The numerous diagrams are usually clear and well integrated with the argument.

The author expresses few value judgments and when he does, is usually careful to define the standard of judgment being used. In several places, however, he seems to suggest to potential business administrators that if and when they find themselves in "oligo" positions, they give serious thought to the advantages of "cautious collusion" and combination. (Cf. pp. 222, 229, 240, 320.) Here "stability" seems to become at least the equal of the profit-maximizing motive in determining appropriate business conduct. Yet in one of the noticeably few paragraphs devoted to the social implications of business decisions, he says, "Businessmen have to be reminded occasionally of these [freedom] aspects of the system under which they operate, since they devote so much of their attention to the creation of monopoly positions, which, if securely achieved, would destroy the capitalist system, or strip it of its virtues" (p. 244).

ROBERT B. PETTENGILL

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Economic History; Economic Development; National Economies
Patterns of Trade and Development. By RAGNAR NURKSE. Wicksell Lectures 1959. Stockholm: Almqvist and Wiksell, 1959. Pp. 62. 3.50 SKr.

The Wicksell Lectures at the Stockholm School of Economics were inaugurated in 1958 by Erik Lindahl. For the second year, Ragnar Nurkse

was selected for this distinguished role, which he performed in two lectures on April 7 and 10, 1959, only a month before his untimely death in Geneva. In a brief introduction to the published lectures, Erik Lundberg expressed the sentiment that publication of the essays was the best way in which he and his colleagues could honor the memory of Ragnar Nurkse.

The first lecture deals with "Contrasting Trends in 19th and 20th Century World Trade." During the century from 1815 to 1914, international trade was, to a degree not subsequently realized, an engine of transmission of economic growth. Britain's income increased tenfold but her imports increased twentyfold. It was principally through this great demand for primary products that the "regions of recent settlement" in the world's temperate latitudes—Canada, Argentina, Uruguay, South Africa, Australia, New Zealand—were provided with the drive toward economic development. But scarcely less important was the fact that the United Kingdom complemented its imports from these regions with a heavy flow of capital, which grew from one-third to two-thirds of British capital exports from 1870 to 1913. Such regions as China, India, tropical Africa, and Central America were not blessed by either a demand for their exports on any comparable scale nor by a comparable flow of capital, and they failed to develop in any such degree as the "regions of recent settlement." In these more fortunate regions, the great markets for primary products in the developed economies and the inflow of capital from that quarter built up not only the export sectors but also the overhead facilities for domestic activities as well. The whole evolution belied the Marxian diagnosis of capitalist foreign investment as aiming at the control of colonial markets and the dumping of excess supplies.

The twentieth century has witnessed a marked weakening of the growth of international trade. During the three decades from 1928 to 1958, the rate of expansion was only one-fifth as large as it was a century earlier. Furthermore 43 per cent of international trade takes place among industrial countries, and only 9 per cent among nonindustrial countries (the remainder being between these categories). Nurkse points out six causes which have contributed to the relative decline in demand for primary products and to the shifting of the importance of international trade as a growth mechanism into low gear.

In the second lecture, he examines industrialization, first for export markets and secondly for home markets, as a means of economic development. Industrialization implies neither the abandonment nor the contraction of exports of primary commodities, but a desirable complement to primary production in the setting of the twentieth century. Industrialization for export is particularly important to densely populated regions as a means of commanding an adequate food supply. But such a policy may encounter difficulties. On the side of the supplying of industrial products, the unskilled labor of densely populated areas may not be really cheap, and there may be a wide gap in the comparative costs of primary as compared with manufactured exports. On the demand side, the older industrial centers may have pronounced comparative advantages; and if not, they may adopt protective devices.

With potential limits on industrialization for export, the less developed countries may turn to industrialization for sales to their own markets. First it has to be realized that, to sustain the new industrial workers, food supply must be increased *pari passu* with manufacturing. Here lies a rub, however: agriculture is often tradition-bound, and the tropics do not seem to hold out as much promise physically as did the regions of recent settlement. But most observers believe that there is ample room for improvement and increased productivity.

Just as agriculture must complement the growth of manufacturing, so the various segments of manufacturing must grow together. Balanced growth accelerates the general rate of output growth. More technically expressed: output must be diversified according to domestic income elasticities of demand. With the growth of industrialization for the home market, the less advanced economies can begin to export manufactured goods to the wealthier countries. But for some time to come it may be expected that the younger industrial countries will have to import capital goods. One of the most conspicuous features of twentieth century trade is the growth of capital-goods imports by the less developed economies. Nevertheless, in the current scene, it is production for the home market, rather than international trade, which holds the key to development in most of the low-income countries.

It is characteristic of Nurkse's intellectual vigor, integrity, and flexibility that he should have proclaimed these conclusions which somewhat reduce the importance of international trade, despite a lifetime devoted chiefly to this subject. No doubt his greatest systematic works are *Internationale Kapitalbewegungen* (1935) and *International Currency Experience* (1944). But on the theme of economic development, to which his contributions took the form of lectures, as for example *Problems of Capital Formation in Underdeveloped Countries* (1952), and numerous symposia and articles, we have the greatest accomplishment of his mature years. The present lectures carry forward this distinguished literature. The scholarly world has lost immensely through the death of one of the most productive, knowledgeable, and wise economists of our day.

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Business Enterprise in its Social Setting. By ARTHUR H. COLE. Cambridge: Harvard University Press, 1959. Pp. xiii, 286. \$5.50.

The Harvard Research Center in Entrepreneurial History, which operated for many years under the leadership of Professor Cole, conducted numerous studies of entrepreneurs and business firms covering many centuries and several countries. The Center, taking its inspiration from Schumpeter's theory of economic development, was concerned primarily with the role of the entrepreneur in economic change.

In this book, Cole has attempted to draw together the implications and generalizations of many separate studies done at the Center and elsewhere. The book is a report on a massive research effort extending over many years. It is also an example, rarely encountered in modern economics, of the inductive

method based on historical research. Cole has attempted, he says, "to extend a bridge between history and theory" (p. xi), "to restore economics to the rubric of a 'social' science" (p. xii), and to bring "all relevant factors into the models" (p. xiii). His method is to proceed "by alternate steps of empirical inquiry and tentative generalization" (p. 137). Entrepreneurial research, he says, is an interdisciplinary inquiry involving economics, history, technology, and all the behavioral sciences. It seeks to explain, and possibly forecast, the great sweep of economic change over long periods of time. Cole points out that most economics is concerned with a time period shorter than the life of an oak tree. He wishes his generalization to cover periods comparable at least to the span of a middle-aged redwood.

His basic postulate is that the entrepreneur is the central figure in economic development and the principal instrument of economic change. He struggles with the definition of the entrepreneur, a concept which does not fit easily into the facts of modern corporate life. While he sometimes refers to the "entrepreneurial team," the researches of the Center seem to have been concerned mostly with the creative individual business leader, and much of the book is devoted to vignettes of various kinds of entrepreneurs, mostly regarded as individual persons.

In the postulate, Cole attempts to formulate a theory of economic change. I found few important new insights beyond those elaborated by Schumpeter a generation ago, and little that is comparable in suggestiveness to the work of Weber or Tawney. The basic theme is that the total culture, as expressed in values and attitudes toward business or production, is an important determinant of entrepreneurial behavior.

Examples of his generalizations are these: that there are observable national differences in entrepreneurship (p. 147), that talent for entrepreneurship is found in all social classes (p. 156), that entrepreneurship can be exercised by public officials as well as by private operators (p. 213), that latent entrepreneurial talent will appear wherever the social structure provides the necessary flexibility (p. 156), that innovation can take the form of new systems of organization as well as new technology (p. 180), that facilities for communication and tendencies to secretiveness or monopoly affect the speed of transmission of innovation (p. 245).

Interesting and valid though observations of this type may be, they do not carry us very far toward a theory of economic change. In this comment, however, I do not mean to be captious. My impression is that the historical method, as the Germans of the 19th century discovered, does not readily yield sharply focused generalizations. In fairness it must be observed that the method of pure theoretical analysis also does not carry us very far in the study of economic change. One must conclude that the progress of economics in the analysis of long-term change must depend on the simultaneous use of inductive and deductive methods, and that there is much work to be done. Those on either side can scarcely afford to throw stones at those who labor on the other.

As a summary of a major research effort, I found the book valuable. The vignettes, which are summaries of research on entrepreneurship in particular

times and places, are gracefully written and suggestive. An enormous amount of history has been usefully compressed for those who may not have the time and interest to review the thousands of pages of historical writing on which they are based. The book concludes with an excellent bibliography.

HOWARD R. BOWEN

Grinnell College

Études économie humaniste—moyen âge et capitalisme mercantiliste. By

ÉTIENNE ANTONELLI. Paris: Sirey, 1958. Pp. 406. 2.200 fr.

Nouvelles études d'économie humaniste—le capitalisme du XIX siècle de 1814 à 1914 et le monde économique présent de 1914 à 1957. By

ÉTIENNE ANTONELLI. Montpellier: J. Reschly, 1959. Pp. 470. 2.000 fr.

We seem to have taken little notice of the emergence of a body of thought and doctrine which presents itself as still another of the many "third" solutions between the extremes of the theoretical model of the market economy and the planned economy. When Fidel Castro of Cuba described his social and economic program to his North American audiences as motivated by principles of economic humanism very few of his listeners understood what he meant. Economic humanism and humanist economy have remained terms which as yet lack any precise definition.

Professor Antonelli attempts not only to provide us with a general definition of the concept of humanist economy but also to trace the evolution and gradual extension of economic humanism within the economic life and general stream of thought of Western Europe, with occasional side-glances at the American scene. The general uncertainty which seems to surround the key concepts of man, humanism and economy in the writings of contemporary philosophers and economists leads the author first to a general epistemological examination of the two components of the composite term *économie humaniste*. According to Antonelli Greek philosophy knew man; but it knew neither humanity nor the concept of humanist economy. Plato, Xenophon and Aristotle did not reflect but actually reacted against the new and progressive forces of their time. Belonging to the conservative elements of their society who aimed at the preservation of the past, the Greek philosophers shared the general contempt for manual work and accepted the principle of a natural hierarchy of classes (slavery). On the other hand, modern Western thought gives expression to a state of social and economic development in the course of which the principles of hierarchy, slavery and caste have been replaced, however imperfectly, by the universalistic notions of human equality, common human traits and requirements regardless of race, creed, social role or status. Antonelli credits early Christianity which for more than 200 years was preached and practiced in the catacombs and never reached the ruling classes of Rome, with the elaboration of this radical and universalistic humanism. For him the term humanist economy stands for an economic order which is dominated by a concern for man and human life which, if lost sight of in the economic sphere, can only lead to a dehumanization of work, human existence and society. In a sense, Antonelli comes close to the thesis of Karl Polanyi's *The Great Transformation* without using the latter's conceptual framework.

It is against this broad background and with the aid of his rather vague definition of humanist economy that Antonelli elaborates four basic theses: (1) Economic humanism found its most perfect expression during the flowering of the Middle Ages (e.g., production of essentials "for use" and local needs rather than markets; pricing and distribution by custom rather than competition; the insistence that the economy must be a moral order; employment and development policies carried out by monasteries rather than manorial estates; protection of the weak, religious fraternities, charity, hospitality, municipal regulations against commercialization, and control of luxuries and conspicuous consumption). (2) Elements of a new economic humanism manifested themselves after the decline of the Middle Ages within market capitalism—the negation of the medieval economy (e.g., the insistence on economic individualism, private initiative, freedom of movement and freedom of contract). (3) This new economic humanism, reflected in liberalism and the model of the market economy, soon lost its substantive content and concern for "living" or "real" human beings due to the fact that economy and society were increasingly subjected to the impersonal automatism of competitive institutions and to what Jevons called the mechanics of utility and self-interest (e.g., widespread neglect of social and human costs of various kinds, depersonalization of industrial relations, control of output and "administered" prices). (4) Contemporary "mixed" economies, with their emphasis on protective labor legislation, social security, price control, subsidies, stabilization programs, antitrust legislation and the manifestation of countervailing power, represent a negation of the capitalist competitive market economy and thus, "as a negation of the negation" of medieval humanism, relate us once more with the earlier economic humanism of the Middle Ages.

The major part of the two-volume work is devoted to a historical account of economic developments and the evolution of economic thought in an effort to illustrate, elaborate and substantiate the four theses listed above. The reviewer has the impression that much of this material, while doubtless related to the author's major concern, remains insufficiently integrated with the specific points raised. Greater economy in exposition and more rigorous concentration on essentials would have improved and strengthened the book. Nevertheless the reader who has the patience to go through these long historical excursions of uneven quality will be rewarded here and there by fresh points of view, references to an encyclopedic literature and a general lucidity of presentation.

Antonelli distinguishes three major strands of economic humanism in present-day thought and action: (1) the religious or Christian current; (2) the Marxian brand with its criticism of "self-alienation"; and (3) a scientific humanism which derives its concept of man, human nature and human needs from a science of man based upon the data and results of such empirical disciplines as anthropology, biology, psychology and paleontology.

Admittedly the subject matter of the book is qualitative rather than quantitative and does not permit short-cuts or mathematical treatment. However, if the mathematical economist has an obligation not to withdraw completely into the phantasies of his constructs, symbols and models, i.e., unless he

wishes to remove himself and his work from the common world of intellect and inquiry, the literary economist including the historian of ideas owes it to our supposedly common scientific enterprise to make his definitions as precise and "operational" as possible and not to overelaborate his evidence by historical excursions without obvious relevance to the matter under discussion. Doubtless economic humanism points to important issues in a world which has as yet to find answers to the questions raised by rapid technological progress, automation, radio-active fall-out, high pressure salesmanship, deceptive advertising and lack of social balance in an affluent society, to name only a few of our current problems. While it may be true that economic humanism has entered, modified and "disarticulated" the 19th century market economy and while it is doubtless correct that the really important problems are dynamic in character where perfection (in a static sense of optimum allocation and maximum efficiency) eludes us, economic humanism is in need of objective and substantive criteria of human well-being and social welfare. Such criteria can be derived, if at all, only from a science of man which would lend objective support to the elaboration of a theory of essential human needs (as distinguished from Veblen's "superfluities") and of minimum requirements of physical and mental health, housing, education and similar collective needs. In short, economic humanism can prove its status as a new approach to economics only by moving resolutely in the direction of a *scientific* humanism and a truly interdisciplinary approach to the science of man and society. Antonelli hints at this himself but in the end fails to elaborate the full implications of this position.

The book will be of interest to all those who want to be brought up to date on the discussion of economic humanism in France and to economists who question the contemporary withdrawal into model building for analytical and predictive purposes without defining the actual social space and time to which either the model or the prediction may have reference. As such it can serve as a timely reminder that social institutions and arrangements need to be evaluated in terms of criteria that are related to man and human life and that such an evaluation is a legitimate scientific concern also for the economist.

K. WILLIAM KAPP

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The State and Economic Growth. Edited by HUGH G. J. AITKEN. New York: Social Science Research Council, 1959. Pp. x, 389. \$3.75.

This is a collection of papers given at the Conference of the State and Economic Growth held in October 1956 under the auspices of the Committee on Economic Growth. It is the seventh of such conferences, the first being in 1951, and is the fourth to have its proceedings published. This new branch of economics deals chiefly with methods used by nations to industrialize, whether they be deliberately designed, as in Russia today, or unconsciously adopted, as in the United States a century ago. The economist believes that he can make important contributions to this branch of economic history by applying his tools of analysis and by comparing the experiences of many nations, something increasingly needed in our fast shrinking world. Implied too is the idea that

national leaders everywhere must find ways to reduce the great discrepancies in living standards between countries. This book of essays by 13 authors analyzes the economic status of various nations when they began to industrialize, their methods of industrializing, and their degree of success.

The conference took as its theme a "model" by Bert Hoselitz with which countries may be analyzed simultaneously in three ways: First, did the nation grow by *expanding* its frontiers or by *intrinsic* (internal) development? Second, was it a *dominant* (economically self-contained) or *nondominant* nation? Third, were the decisions allocating resources *autonomous* (nongovernmental) or *induced* (governmental)? There are eight possible combinations of these six types of situation. For example, the United States was rated expansionist, dominant and autonomous, whereas the "people's democracies" of Eastern Europe are today the opposite. Each paper deals with a country, or a group of countries, representing one of the possibilities. Among the countries are the United States, 1820-90, discussed by Henry Broude; Australia, 1860-1900, by Noel Butlin; Canada, by Hugh Aitken; Russia, 1890-1939, by George Carons, Jr.; Manchuria, 1860-1940, by Edwin Reubens; Germany, by Norman Pounds; French and German Mining, by William Parker; Switzerland, by Alfred Bürgin; Turkey, 1933-50, by Robert Kerwin, and Eastern Europe's satellites, by Nicolas Spulber. In addition, there are concluding essays by Richard Hartshorne and by Bert Hoselitz, and a summary of all the papers of the conference's conclusions by Joseph Spengler. The papers vary in clarity and in the extent to which the authors keep their assignments in mind. Of the country papers those by Butlin on Australia and by Parker on French and German Mining were particularly impressive. Richard Hartshorne's "The Role of the State in Economic Growth" was especially rewarding. In it he offers a table measuring the attainment of various nations (pp. 292-94) and he also analyzes the eight factors most essential to economic growth. The most advanced nations have had ample power resources within them and have been able to generate a spirit of entrepreneurship.

In his summary paper Hoselitz produces an evolutionary model. A nation tends to pass through three phases: (1) achieving solidarity (a national unity); (2) attaining its goals (government ownership or regulation of industry), and (3) adapting itself to the world it has created. Then in three pages he compresses some 2000 years of Western civilization's history into this framework. Further on he explains what produced the few great waves of entrepreneurial vigor in European economic history: entrepreneurs appeared when they had freedom to work out their own solutions.

In a review of all the papers and conclusions Joseph Spengler, ever provocative, says that Hoselitz's first model predicts nothing and so has limited value. He also asks whether the experiences of the Western world can point the way for underdeveloped Eastern nations whose cultures may cause them to react differently.

Only rarely do the writers ask to what degree the tyranny of the state has eventually improved the standards of living. This would seem to be the fundamental measure of success. The book also suggests that an autonomous economy, such as ours, is the exception and the induced one is more normal; too,

that an induced economy may be needed to put a nation into a condition to grow, but it takes autonomy to produce much growth.

This book has exciting ideas, once one penetrates the abstractions and learns the jargon; but the historical support for many of its theories is often too meagre to convince the historian. It is nevertheless a very worth-while pioneering project, and deserves a better index.

DONALD L. KEMMERER

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Formação econômica do Brasil. By CELSO FURTADO. Rio de Janeiro: Fundo de Cultura Editora, S.A., 1959. Pp. 291. Cr\$220,00.

This study reviews the economic growth and processes of Brazil as an underdeveloped country from the colonial era to 1958 to provide the Brazilian lay reader with an easily readable economic history. Trends of recent years are related back to early roots in Brazil's traditions and institutions involving her coffee-sugar-cotton-cacao-mining-livestock-subsistence economies. For the English-speaking economist the book's main interest probably lies in its assessment of the influence on Brazil's economic growth and capital formation of various factors: the political, social, geographical, fiscal, monetary and others.

The first 7 chapters treat the colonial era; 8 through 15, the 16th and 17th century slave-based agricultural system of the tropical area, and the 18th century slave-based mining economy of the central part of the country; and chapters 16 through 29, 19th century conversion to a wage economy. Chapters 30 through 36 analyze the emergence of industrialization in the 20th century and venture some forecasts. Most of these last seven are based on the author's *A Economia Brasileira*, published in 1954.

A recurring theme of the book is the export-agricultural interests' almost uninterrupted control, since Brazil's independence and well into the first half of this century, of economic policy whenever they desired to influence it. Even with a shift of governmental power to Brazil's subsistence South, in the third decade, economic regulations continued favorable to the export-agricultural interests.

The author implies that capital formation in the country was handicapped, after independence, in comparison with that in the United States, by Brazilian governments' persistent deficit-financing without the accompanying purchase of government securities by private investors, whereas our own investors' willingness to purchase U.S. Government securities was an important factor in developing our own capital flows. Nevertheless he supports the further dose of inflation in the first half of the 20th century embodied in the coffee valorization of the 'thirties. He admits that both this, and the later selective exchange controls, followed the historical pattern of shifting onto the general public financial disadvantages which would otherwise have accrued to the historically privileged export-agriculture group and its accumulated Brazilian capital. However, he concludes that formation of Brazil's present private industrial capital was made possible by (1) the stimulus of coffee valorization, which through its multiplier effects brought Brazil out of the depression well before other countries and, especially, before the undeveloped ones which followed

orthodox policies; and (2) the preferential exchange rates granted in the 'forties for machinery and other producers' goods, making investment in industrial capacity doubly attractive as a result of (a) the prohibitive pricing of imported consumer goods and (b) the presence of purchasing power for domestic products in the hands of a wage-earning class. Thus, a timely application of further inflation is shown as one of the two main factors contributing to the growth of Brazil's current industrial capital. He does add that prolonged inflation, continuously adding to the entrepreneur's share of income, would eventually result in disinvestment.

Probably the prime aspect of his treatise meriting careful consideration by economists of the more developed countries is its reflection of the tremendous politico-economic insistence of undeveloped countries in these decades on (a) seeking rapid growth regardless of cost, and (b) using to this end methods considered unorthodox. As Chief of the Development Division of CEPAL (Economic Commission for Latin America) and in other international posts, Furtado has had important sounding-boards from which to advance his views. He is obviously well versed in the new economics, within the framework of which his analyses have evolved. For the first three decades of this century, he says, Brazil's unchanging confidence in the monetary rules followed in Europe resulted in applying to an underdeveloped country principles divorced from reality.

The reviewer is impressed by the author's ingenuity in making statistical estimates from existing data with their typical lacunae for the earlier years especially. The estimates are conscientiously explained, even at some sacrifice of readability. The detailing of sources in footnotes adds to the impression of care. In footnote 49, page 57, giving Simonsen one of the many acknowledgments for use of data, the author states he does not always follow Simonsen's practice of using the more conservative of the data available. He shows moderation in considering possible restraints on Brazilian industrialization under the early 19th century treaty with Britain, when he indicates that restraining effects of low Brazilian tariffs stipulated by the treaty were much more than offset by prompt Brazilian exchange depreciation.

Whether an economist leans towards orthodox or newer economic theories, this study can greatly add to his understanding of the forces at work in our historically friendly neighbor to the far south, so territorially and culturally ample that the noise of expanding industry is in no danger of detracting from the cherished cadences of the song of the *sabid*.

ALLEN H. LESTER

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Die gegenwärtige Aussenhandelsverflechtung der Sowjetischen Besatzungszone Deutschlands. By ERICH KLINKMÜLLER. Osteuropa Institut, Freien Universität Berlin. Berlin: Duncker & Humblot, 1959. Pp. ix, 196. DM 25.80.

The darkness that covers some of the principal economic facts of East Germany results in part from the willful veiling of price, income, trade and payments data by the local regime. But it is also due to a lack of incisive efforts

of Western economic analysts close to the scene to study what can be learned from official East German and Soviet bloc sources or from direct observation. Considering the strong concern of West Germans with the division of the country by the iron curtain, and the impact of the Soviet-sponsored "D.D.R." (the so-called German Democratic Republic) on their lives, one might expect that more West German economists would bother to analyze that economy systematically.

Erich Klinkmüller, a young economist at the Osteuropa Institut of the Free University of Berlin, has made the first comprehensive analysis of the foreign-trade system of Soviet-occupied Germany. The book offers a statistical study of East German foreign economic relations, particularly with the Soviet Union and the Soviet bloc, and it discusses various theoretical and institutional aspects of these relations, such as the problems of foreign trade planning, the dichotomy of internal and foreign trade prices, the dominant role of the Soviet Union in East German economic policy, bilateralism and economic coordination within the bloc. The empirical work is on the whole competently done, and the theoretical discussion, while sometimes hesitant and a little blurred, is intelligent and well linked to the international literature. This monograph is one of the best studies of the East German economy that has appeared.

Klinkmüller recognizes in East Germany's external economic relations the interplay of several partly cooperating, partly conflicting factors: the resource endowment and structure which call for intensive foreign trade in manufactured goods (exports) and basic materials (imports); the dominant role of the USSR in rerouting the area's trade and regulating its composition and procedures; the imposition of a command economy with its hankering for total control and its tendency to autarky. He shows how these factors combine to create problems of rationality in the conduct of foreign trade, such as uncertainty as to comparative costs (due to arbitrary domestic prices in East Germany and communist partner countries), and manipulation of prices and financial arrangements to the advantage of the USSR. Klinkmüller also describes some of the peculiar instabilities of the planned trade of the Soviet Zone, e.g., the "planning seasonal" in industry and trade, with its typical fourth-quarter peak and first-quarter trough, which reflects the all-out production and delivery campaigns toward the end, and the frictions at the beginning, of the annual plan periods. He also discusses the rigidities of trade among the communist countries and points to the possible contradictions between the efforts to coordinate industries in several bloc countries on a product-by-product basis—under currency and price conditions that make it hard to test the rationality of the division of labor—and the consequences of closed national economies trading among themselves with a minimum of multi-lateral settlement facilities. These contradictions may give rise to balance-of-payments problems.

East Germany, like the other bloc countries, prefers to keep its balance of payments a closely guarded state secret, so much so that some financial transactions with the Soviet Union may be known only at the apex of the party hierarchy. Klinkmüller makes an attempt to estimate the balance of payments

for recent years, but the result is at best a rough first approximation. The meaning of the officially published commodity trade values is obscure for a number of reasons, among them the changing treatment of uranium exports and the veiling of armament imports; data on the service and capital accounts are fragmentary; the transactions with the Soviet forces in Germany are left in the dark. The author seems to have been unaware of the fact that Soviet-East German commodity trade, according to the latest Soviet sources, totals up quite differently, for 1955 through 1957, from the figures published in East German sources. For 1957 especially the differences are sizable. The detailed Soviet publication shows a Soviet export surplus of 400 million rubles, the East German Yearbook an East German export surplus of 300 million rubles. Both figures are computed on an f.o.b.-frontier-of-exporting-country basis. A good deal remains to be explained before the balance of payments of this area can be understood, and the full story is likely to be a fascinating one.

The "price equalization" system, by which East Germany covers the discrepancy between its trade balance at internal and external prices, is well described, although perhaps not in the detail necessary to understand the operation fully. The author points out that the net equalization payments out of the state budget to domestic enterprises represent a charge (downward correction) on the available national product. The statistical exercise, however, that seeks to express this process numerically, suffers from at least one major blemish. The estimates of foreign trade at domestic prices (Table 6) command little confidence for the later years; the assumption that the average price equalization factor on the import side has remained constant since 1951 seems quite arbitrary, and the variations of the factor on the export side are given without any explanation. (The first two lines in Table 6, incidentally, seem to show these factors in the wrong places.) Also, the net price equalization payments for 1955 and 1956, based on figures published in the West German Statistical Yearbook, run much higher than the figures shown in the ECE *Economic Survey of Europe, 1957* (Ch. 6, p. 28). A reconciliation of the estimates would be desirable. Klinkmüller may also be criticized for reproducing somewhat lightheartedly the East German official national product figures. These figures are governed by a variety of peculiar definitions and practices and hardly deserve being shown, without adjustments, side by side with the West German national product statistics.

The uncertainty of the price equalization figures, taken together with the lack of allowance for the changing treatment of uranium in the foreign trade statistics, cast some doubt on Klinkmüller's conclusion (p. 41) with regard to the development of the terms of trade of the area from 1955 to 1957. The terms of trade of East Germany may indeed have improved significantly in that period simply because the Soviet Union agreed to pay for uranium shipments. An analysis of Soviet foreign trade statistics (*Rev. Econ. Stat.*, May 1959) leads the present reviewer to suspect that the terms governing other East German trade with the Soviet Union also improved somewhat during that period but that price disadvantages on imports from the Soviet Union were not entirely removed. The main import commodities, incidentally, for which these price disadvantages can be found (grains, cotton, coal and fats), were

never affected by the Western embargo on strategic exports to the bloc. One may therefore doubt that the embargo added significantly to the bargaining weakness of the occupied area vis-à-vis the Soviet Union in the early 1950's, as Klinkmüller seems to think.

The breakdowns of East German foreign trade by commodities and countries and the matrixes of intra-bloc trade presented in the monograph may be of interest to students of international trade and Soviet economics. They bring together most of the available statistics on East Germany's considerable trade with the Soviet realm, with the exception of the detailed data on Soviet-East German trade published by the Soviet Union in 1958. Trade with Western countries other than West Germany is covered less exhaustively. In a final section, the author adds East and West German foreign trade together and looks at the distribution of the fictitious aggregate over the various countries. He finds that, compared with before the second world war, East Germany's share in "total" German foreign trade has fallen, and that the share of Eastern Europe in the "total" is about the same as in 1936.

One may hope that this informative and straightforward monograph will stimulate further studies of the East German economy.

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The Growth Rate of the Japanese Economy since 1878. By KAZUSHI OHKAWA AND ASSOCIATES. Tokyo: Kinokuniya Bookstore Co., 1957. Pp. xvii, 250. \$6.00

This small book, presenting and discussing in detail new long-term national income figures for Japan, is a translation, revised and expanded, of a 1955 report which won the Mainichi newspaper prize. The authors modestly regard the present study as only an interim statement in their planned revision of Japanese historical statistics.

A few noteworthy predecessors in Japanese national income research are: Nakamura's 1902 estimate for the year 1900; the first government (CBS) estimate in 1928 for the year 1925, extended back to 1887; Hijikata's publication in 1933 of a series for 1919-1930, extrapolating 1919 figures back to 1900; and Yamada's book (1st ed., 1951) giving an 1875 to 1942 or later, series. Since the second world war there has been an official (EPB) yearly estimate, which has been run back to the 1930's. The present study's national-income-produced series (for 1878-1942) puts a fair amount of emphasis procedurally on the period from 1878 to 1918-22, since after 1922 or so "the differences found among various estimates are rather slight" (p. 35).

The national income estimates made by CBS (1928) for the period before and following 1900 were very low and hence the rise was steep thereafter. Hijikata in 1933 lifted the estimates for the first decade of this century somewhat and although this lessened the rise, he still left it a remarkable one. One effect of Yamada's decisions in his 1951 work was to jump the pre-1922 figures well above practically all previous estimates, sharply cutting the growth rate indicated. What Ohkawa's group does now is to lower Yamada's

pre-1922 figures part way toward the old Hijikata series, restoring a little of the steepness to the rise and leaving a smoother slope. In effect then, Ohkawa makes a conservative restatement of Yamada. Growth rates for pre-1922 still remain very high, even if considerably less sensational than in the CBS series of 1928.

The present study suggests that a "main part of the difference between" its aggregate income series and that of Yamada lies in different estimates for the tertiary sector (p. 115). Estimates are made for the primary sector (agriculture, etc.), the secondary (manufacturing, etc.), and the tertiary (a residual category covering not only communication, transportation, commerce and government, but out of statistical necessity, also government manufacturing, and private building and construction).

Especially for the tertiary sector and for that sector before 1918, Ohkawa's estimates are necessarily indirect and somewhat arbitrary. A few details will show this. Ohkawa gets figures for the pre-1918 tertiary sector by assuming such figures to be a fixed proportion of similar figures in the goods-producing sector (that is, primary plus secondary). He finds his proportion in the 1921-1929 period as a base. Since he has 1878-1918 yearly estimates for the goods-producing sector on per capita income and on wages, he can use his fixed 1921-29 proportion to work out a yearly per capita figure for the tertiary sector, 1878-1918. Then to get tertiary yearly aggregates, he multiplies the tertiary per capita figures by the number of gainfully occupied in the tertiary sector each year, 1878-1918.

Although widely used in this study, "gainfully occupied" is, for Japan before 1950, a statistical concept open to serious criticism, as the authors realize (pp. 142 ff., p. 34 fn.). The concept reflects, for example, usual status not actual employment.

The paragraphs above are intended to convey something of the impression acquired by this reader that Ohkawa's improvements on the Yamada series cannot be completely separated from the preconceived ideas of the Ohkawa group on what would be a reasonable result.

Part I of the book gives the new national income series for 1878-1942, deflated by a somewhat new wholesale price index, and broken down into three sectors. For the aggregate product (1878-1942) the modal growth rate of real income per gainfully occupied person is said to be a little more than 3 per cent (p. 23). An appendix on "Economic Growth and Capital Formation in the Post-War Period" indicates that the rate for 1952-55 is 3.3 per cent (p. 239).

Part I also has a brief, interesting section on the relation of previous estimates to the present series. Part II gives in detail the procedures followed in measuring each sector, discusses various deflators considered before choosing the one used, and surveys Japanese statistics on population.

Part III treats of the measurement of capital formation. It consists of three papers independent of the rest of the book. Ito works out an approach employing national wealth data. Shinohara uses the commodity-flow method, after Kuznets; and there is a report on the possibilities of using capital coefficients by individual industries.

On page 122 in Table 2, showing the price index used, column 2 seems to be intended as a simple five-year average, compiled from Table 6 (p. 130). But, if so, the first two figures, 41.7 and 31.6, should be 46.3 and 33.8. This error also affects the first two figures given for Yamada, Table 2 (p. 36). Similarly, in Table 2 (p. 122), "our" index for 1918-22 should be 158.4 not 150.4. This error also affects the Yamada, Hijikata, and CBS figures for 1918-22, Table 2 (p. 36).

MICHAEL O'CONNOR

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The Agrarian Origins of Modern Japan. By THOMAS C. SMITH. Stanford: Stanford University Press, 1959. Pp. xiv, 250. \$5.00.

Unraveling the agrarian origins of modern Japan is a monumental task which would occupy more than a lifetime of any single scholar in the field. The immensity of the task is due partly to the varieties of strains observed in the Japanese feudal society and partly to the paucity of documentary materials of the pre-Restoration (1868) period. T. C. Smith has addressed himself to this task apparently with full realization of the pioneering character of the research involved and has come out, in a relatively short time, with a commendable result, neatly organizing the thus-far available studies by Japanese scholars, in particular those of Ariga and Furushima. Smith's interest seems to have lain especially in tracing the intricate course of change in Japan which produced the present-day landlord-tenant relations from the social relations of owner-cultivated farm units of the feudal period. For this purpose he first analyzes empirically the farm organization (the land system, labor services, the organization of political power, etc.) of the traditional village. What is characteristic here is a system of extended family which permits a fairly large-scale unit-operation on a cooperative basis and which might be visualized as composed of three concentric circles of the nuclear family, affiliated relatives, and a servile group. The hierarchy of authority based upon such a system of socio-economic organization is said to have given the traditional Japanese village "its fierce and pervasive sense of solidarity." What shattered, albeit gradually, this pastoral tranquility was, as usual, (1) the growth of the market, with its impersonal logic of money economy, and (2) the development of agricultural techniques which, paradoxically enough, acted as a stimulus to the smaller farming unit. These two factors together brought about the disintegration of the cooperative farming of the extended family and gradually helped crystallize a new class relation with which tenants in the modern sense of the term emerged.

This, in broad outline, is the picture which Smith depicts with unusual clarity, drawing in the process upon extensive empirical research done by Japanese scholars as well as upon his own original research on the particular problem of political conflict in the village in transition. His interest in the problem of modern Japan (1868-), it may be surmised, must have led him inevitably to its agrarian origins in the Tokugawa period (1603-1867). But such "origins" have in turn their origins in the antecedent period; and if at all, Smith's weakness appears to lie in leaving some retrospective loose ends in

his analysis. For example, the dominant characteristic of the class relations of the Tokugawa period was that the warrior class lived on the surplus of the agricultural-producing class *without* any intermediary group of persons. Exceptions to this rule were observed notably in the *Kinai* district where the old manorial system (*shō-en*) lingered on the longest and where manorial masters, instead of transforming themselves into a warrior class, continued as large-scale landowners appropriating a part of the surplus to themselves. Smith draws a large part of his empirical evidence from the Tokugawa record of this *Kinai* district and often goes on to reason as if that district were typical.

In general, his method of marshalling historical facts for his case tends to be somewhat "particularistic" in the sense that each of the historical elements in the situation is studied separately. Thus, the facts of even recent date are brought in to support a certain point essentially germane to an earlier period (see pp. 41, 47, 57, 156, 169). Also, it appears that not enough attention is paid to the integral institutional phenomena of the Japanese feudal society, such as the *sankin-kōtai* system (which certainly played a major part in stimulating the spread of the money economy), the "five-family group" system (*go-nin-gumi*), the development of merchant capital in the late Tokugawa period, etc. The use of Japanese terms in the text is also too bold, at least to my taste, often stretching too far a specific category to cover too wide a field, e.g., *nago*, *mutaka*, *oyakata*, etc.

In spite of these shortcomings, however, the main contention of the book is, I believe, broadly correct, and furthermore is closely argued with detailed empirical support. The author and the publisher are highly to be commended, too, for the remarkable lack of misprints of Japanese spelling except one mistake where a feminine name (Kazuko Tsurumi) is represented by a masculine pronoun (p. 64).

SHIGETO TSURU

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Economic Policy Revolution and Industrialization in Latin America. By

PEDRO C. M. TEICHERT. University, Miss.: Bureau of Business Research, University of Mississippi, 1959. Pp. xviii, 282. \$8.00.

The author of this book attempts to study the forces in Latin America that are allegedly pushing it "towards an unprecedented era of planned development and industrialization" (p. iii). Though his focus is the economic policies (protectionism and planning, for example) that are regarded as the basis of the new industrial society that he claims is in the making, he covers much historical ground in showing how past revolutions and wise, up-to-date policies have removed institutional obstacles to growth. He has a most exuberant animal faith in the prospects of Latin America that he describes as "an area that easily might become one of the economically most important and powerful regions of the world" (p. iv). This is questionable, of course, especially while Argentina and Chile continue in the doldrums and Brazil's and even Mexico's rate of growth go down perceptibly.

Professor Teichert swallows whole, and in the crudest form, many economic

notions that are the fashion today in some Latin-American circles. Everything that smacks of *laissez-faire* orthodoxy, for instance, is to be rejected, and indeed "the more underdeveloped the area, the more unorthodox would be the economic policies pursued in an attempt to change its destiny for the better" (p. 39). It is a wonderfully simple guide to economic policy that puts statistics on the comparative level of development in the place of good sense. But he is emphatic in rejecting traditional economics (p. 233):

The second point is concerned with the fact that Anglo-Saxon policies directed towards the maximization of profits in monetary terms are not always the primary goal of the Latin Americans. It is instead a broader maximization of life enjoyment the Latin Americans are after, including the satisfaction of their spiritual and intellectual wants.

The application of marginal and comparative cost analysis as developed by classical economics is, therefore, not always appropriate. . . .

This also in part explains the continuous drive to industrialize even though manufactured goods could be imported much more cheaply from abroad. But it is for instance the realization that the multiplier only works in closed economies, that made it almost mandatory for Latin America to develop basic industries, particularly steel mills, at any cost.

The author also pays due respect to "balanced development" that he interprets to mean to "move ahead simultaneously on all fronts—increasing food production, export production, industrialization and resource development to the same degree" (p. 123). Why to the same degree for each and every country is not explained.

Though light on ideas, the present study is heavy on facts, many of them given with little apparent purpose rather than to sustain theses, especially the self-designated core of the study, the "theory of the peripheral economy," that is given this omnibus definition (p. 199):

It is based on the interrelation of technical problems, savings, investments and capital formation; naturally it stresses the institutional factors involved in the development process. The theory proposes measures by which to avoid the high fluctuations to which the under-developed, monocultural export economies are especially subject.

To offer prescriptions is really a big jump for a theory that never was anything but a presumptuous name for the simple but resented fact of dependence of the raw material producer upon the manufacturing country.

The bulk of the book is made up of loosely connected narratives of economic history, particularly on Uruguay and Mexico, the first country being given the curious role of a leader in economic growth. The bibliographic references seem disproportionately abundant for the little light the study casts. In general, the book misses the goal of bringing onto common ground the Latin-American that is always complaining and the American that is always scolding.

THEODORE A. SUMBERG

New York, N.Y.

Ukraine and Russia: A History of the Economic Relations between Ukraine and Russia (1654-1917). By KONSTANTYN KONONENKO. Marquette Slavic Studies, IV. Milwaukee: Marquette University Press, 1958. Pp. xv, 274. \$7.50.

Numerous studies treat the prerevolutionary Russian state as one economic entity. Such an approach blurs the peculiarities of the economic past of areas into which Russia has expanded in modern times, and leaves no room for an analysis of the interaction between Russia proper and the newly acquired territories. Professor Kononenko's work, which interprets the economic relations between Ukraine and Russia, is therefore an important contribution.

The thesis of the book is clear: Having fallen under the political control of Russia in the late seventeenth century, Ukraine's economy became subject to Russian interests. Russia succeeded in transferring considerable "surpluses of wealth" from Ukraine by imposing tariffs discriminatory to Ukrainian industry, shipping, and commerce; by forcing a market dependence on Russia through direct control of industry, building a Moscow-oriented communications system, etc.; by extracting wealth from Ukraine through taxation and control of capital, yet spending much less in Ukraine itself.

This is by no means a new interpretation, and it will even be found in Soviet publications, though in an inhibited form. Kononenko's book, however, treats the topic intensively, and endeavors to support the thesis by statistical data on diverse phases of economic life. He is aware of the pitfalls of a narrow economic interpretation of the causes and nature of imperialism, and is therefore satisfied with presenting the evidence that the surplus production of one national economy (Ukraine) had been appropriated by another (Russia) through military and political superiority. Some of the tables, we note, refer to fragments of the economy or to short spans of time, so that inferences drawn from them are not convincing. The book as a whole is argumentative, and looks at the historical evidence from the standpoint of the thesis; this, in the opinion of the reviewer, prevents a balanced over-all analysis.

The value of the monograph to the historian would seem to be primarily that it identifies the peculiarities of Ukraine's development of commerce, agriculture, and industry in the stated period. This, together with the discussion of the economic relations of Ukraine with Russia in all phases of economic life, helps to identify the forces which shaped Ukraine into an important industrial country on the continent of Europe. The reader will find the volume a revealing introduction to understanding the position of Ukraine in the sphere of Russian domination.

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Economic Systems; Planning and Reform; Cooperation

A History of Socialist Thought. Vol. IV (2 parts): *Communism and Social Democracy, 1914-1931*. By G. D. H. COLE. New York: St. Martin's Press; London: Macmillan, 1958. Pp. x, 455; viii, 483. \$14.50.

Volume IV of G. D. H. Cole's *History of Socialist Thought* was completed at the end of 1957, little more than a year before his death in February 1959.

He had planned at least one more volume carrying the story down to the end of the second world war and possibly beyond, but I do not know whether he left any of this projected final volume in publishable form. Whatever may be the case in this regard, it is a pleasure to be able to report that Volume IV, which is divided into two parts, each between its own covers, brings the story to a logically satisfying stopping point. As it stands, this broadly conceived and splendidly executed history makes a fitting monument to one of the outstanding economists and social historians of our time.

I reviewed the first three volumes of *A History of Socialist Thought* in an earlier issue of this journal (December 1957) and will not repeat what was said there about the general plan and character of the work. Suffice it to say that Volume IV continues the pattern set in Volume III (which was also in two parts) of organizing the subject matter on a country-by-country basis, with a number of interspersed chapters on international aspects of the socialist movement, plus a concluding essay on the nature of the relationship between communism and social democracy in the years between the outbreak of the first world war and the depths of the great depression. Moreover, like the preceding volume the one before us is both more and less than a history of socialist *thought*. It would perhaps be more accurate to call it a history of important labor and revolutionary movements of the world during the period covered. In the case of some countries, this requires a good deal of attention to the clash and development of ideas, while in the case of others the chronicle of events is unrelieved by manifestations of intellectual originality or independence. (Unfortunately the United States falls in the latter category, so that the single chapter devoted to this country and Canada is in the main a rather dreary recital of factual quarrels, splits, and maneuvers. The interesting—and I think also important—question which Cole raised in Volume III, namely, why a rapidly growing U.S. socialist movement went into a long-term decline after 1912, is not reopened in the present volume. Judging from talks I had with him after my earlier review, I think it is quite likely that he would have returned to this problem if he had lived to complete the work.¹)

There is, of course, no possibility in a brief review of evaluating or criticizing the more or less separate national histories which comprise this volume. They are inevitably of varying quality—best and most absorbing in the case of the European countries which Cole had closely observed over the years, less satisfying in the case of other countries which he knew only or largely through library research. One thing, however, all the chapters have in common: in respect to each national movement, Cole has attempted to set down the relevant factual highlights clearly, concisely, and accurately. So far as my limited knowledge permits me to judge, he has been remarkably successful in doing so. I believe that the student who needs a reliable guide to socialist movements anywhere in the world will find what he is looking for in Cole's *History*. And even the specialist will find much of value—not least the lists of

¹ I would like to take this occasion to make a correction in the earlier review. There I said that it seemed obvious that Cole had "A great respect and liking for Marx." He was at pains to make clear that while he certainly respected Marx he very definitely had no liking for him.

socialist leaders with carefully checked birth and death dates, and the 20 pages of selected material at the end of Part II.

It is no bibliographical criticism to say that Cole's interpretations of his material—as distinct from his presentation of the facts—will not meet with general acceptance. He was himself a dedicated socialist, which explains why he cared so much for his subject and understood it so much better than an unengaged scholar possibly could have; but within the movement he stood aloof from all parties and factions, keeping his eyes steadily fixed on ultimate ends, encouraging everything he thought contributed to their attainment, and unsparingly criticizing whatever he thought incompatible with them. Such a person can command more respect than agreement, and so it was with G. D. H. Cole. Non-socialists tend to consider him a dangerous radical, communists to dismiss him as a half-way revolutionary, and social democrats (a category which includes most of the British Labour Party) to suspect him as a fellow traveler. They are all quite justified in a way, and yet the more intelligent among them must know that they are also quite wrong. At bottom Cole was that paradox on which perhaps the future of the world depends, the individualist who believes in the desirability and indeed the inevitability of collectivism. His *History of Socialist Thought* reflects the man—in its honesty, its insights, and its deficiencies.

PAUL M. SWEETZ

Cambridge, Mass.

Planning in Norway 1947-1956. By P. J. BJERVE. Amsterdam: North Holland Publishing Company. Pp. xi, 384. \$9.25.

Norway is one of the few Western countries where the preparation of national economic plans plays an important role in policy formation. The planning is detailed and is taken seriously by government administrators. Consequently, an evaluation of this country's experience could be useful indeed. To date, however, serious evaluation has been hampered by the lack of comparable *ex ante* and *ex post* data. Differences in accounting procedures and definitions, inadequate price and volume indexes, and inadequate knowledge of margins of error in the accounting figures have combined to make difficult the massive task of comparing projections and plans with actual results. Petter Jacob Bjerpe is in an excellent position to give us the necessary comparable data and to undertake a comprehensive evaluation. Not only is he presently the director of the Norwegian Central Bureau of Statistics, but his role in establishing this planning system gives him an intimate knowledge of its operations. Bjerpe has done a painstakingly thorough and detailed job of presenting the necessary data. His evaluation, unfortunately, although of considerable interest, is not as complete as one could wish.

To a large extent the incompleteness of the evaluation stems from Bjerpe's limited purposes. As he makes clear, the book does not attempt to evaluate economic policy *per se*. It does not directly attempt to analyze the consistency of the goals, the relevance of the means, or the efficiency of the planning system. Instead, over two-thirds of the book is devoted to the twin tasks of, first,

presenting comparable *ex ante* and *ex post* figures, and second, explaining the deviations that occur between them. The explanations reflect different levels of analysis, starting with statistical observations and ending with hypotheses about administrative behavior patterns. Examples of the former include explanations of the varying degrees of inaccuracy of different projections, and recognition of the fact that preliminary accounting data underestimate changes from the previous year; examples of the latter include the hypotheses that superiors do not take into account the way subordinates actually carry out orders, and that there is a tendency to underestimate changes because of greater risks attached to overoptimistic estimates. With regard to the statistical observations, evidence is presented in great detail; with regard to the observations about behavior patterns, we must rely on Bjerve's judgment, since evidence from unpublished government records and interviews is not presented.

One of the procedures used on the statistical level of analysis seems of questionable value in the Norwegian context, although quite interesting. This is the use of a numerical model to separate errors arising because of bad forecasts of exogenous variables (e.g., export prices) from other sources of error (e.g., effects of changes in exogenous on endogenous variables). If a complete numerical model were available and if it were actually used to formulate the projections and plans, this separation of errors could be accomplished by resolving the equation system, using realized values for the exogenous variables and noting the degree of improvement in the results. The Norwegian national budgeting system does not rely upon an explicit econometric model. Rather, it relies on estimates submitted by strategically located specialists in the government administration, and the coordination of these estimates by a trial-and-error process involving liberal use of the telephone and the definitional relations of the national accounts. Since it is not possible to ask the administrators what they would have done had they known the actual values for the exogenous variables, Bjerve uses a simple model (three equations and five variables) which he hopes correctly simulates their behavior.

Actually, the variables assumed to be exogenous in the model (exports and investment) are not completely so, nor are they so treated by the planners. This makes it difficult to say which is cause and which is effect in "explaining" the deviations in one variable by reference to another. Although Bjerve admits this and cautions the reader that he must not place too much weight on results derived solely from the model, he does conclude, primarily by reference to the model, that unrealistic assumptions concerning exports and investments account for a large part of the errors in forecasting gross national product, imports and consumption. The procedure would certainly be justifiable and useful if, *inter alia*, the exogenous variables of the model were in reality treated as such, but considering the qualifications necessary in this case, its value is somewhat questionable.

The final chapter, entitled "An Appraisal," is different in character from the other chapters and does not depend heavily on the previous 200 pages of detailed analysis. Bjerve asks a series of questions—for example, "Is National Budgeting Used as an Important Tool of Economic Policy?" "Are Improve-

ments in the Present National Budgeting Methods Feasible?" "Is National Budgeting Useful in an Economy without Direct Quantitative Controls?" "Have Major Post-War Economic Goals Been Achieved?"—and answers them all in the affirmative. This chapter is interesting because it considers some non-statistical aspects of the planning system and presents the author's personal attitudes about them. It is not, however, a summary of conclusions derived primarily from the statistical material presented earlier.

The value of this book lies first and foremost in the presentation of comparable *ex ante* and *ex post* data that can be used by others to make further analyses and international comparisons. Apart from this, it is of interest because of the light thrown on such scattered facets of planning and control as the effects of publishing plans and estimates as compared with keeping them secret, the way in which licensing officials influence planners, and the value of this planning procedure for the education of public officials, all of which are suggested by Bjerve's comments on the statistics. The book is hard reading, but for a statistical record of one country's experience in attempting to forecast and plan, and for discerning comments on the nature of the planning system and the behavior of its planners, it is worth the struggle.

RONALD G. RIDKER

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Business Fluctuations

Business Conditions Analysis. By JOHN P. LEWIS. New York: McGraw-Hill, 1959. Pp. xii, 602. \$8.25.

Business Conditions Analysis covers five general subject areas. Part I is a straightforward, short and informed introduction to national income accounting. Part II is a more extended treatment of the theory of aggregate income, including a discussion of the role of money in the economy. Part III is a very brief account of business conditions since 1930. Part IV is an exposition of short-run business forecasting. Part V describes the complexities of long-term forecasting and the long-run outlook for pricing and pricing practices.

The task outlined in the above paragraph is ambitious, especially when directed toward an audience "whose preparation in economics does not necessarily extend beyond the usual two semester introductory sequence." The general reader will be treated to a number of revealing insights into the operation of the economic system and will be exposed, possibly prematurely, to many of the ideas, concepts and controversies in the forefront of contemporary economics. In comparison with the typical text on business forecasting, the book is pitched at a fairly high theoretical level and is written in the belief that the would-be analyst must first master the formal apparatus of macroeconomic theory before business conditions analysis becomes a very meaningful undertaking. The analysis is essentially neo-Keynesian in its orientation, even though throughout the book the author displays a deprecating attitude toward Keynesian economics.

In Part IV the author follows what have become in recent years fairly conventional methods in what he variously describes as "opportunistic model

building," "short-run outlook analysis" or more simply as business forecasting. There is a chapter on government spending with appropriate remarks on budget concepts. Projections of plant and equipment expenditures are discussed in terms of the McGraw-Hill and Commerce-SEC surveys of businessmen's intentions—alternative analytical approaches are not explored. The demand for housing is analyzed in terms of the number of households, income, finance, costs, etc. Consumer durables are discussed with the automobile market analyzed separately. Nondurable and service expenditures, on the basis of a regression analysis, are assumed to "absorb about four-fifths of disposable personal income." Inventory projections lean heavily upon inventory-sales relationships tempered by considerations associated with the general inventory cycle.

The last chapter in this section is devoted to completing the short-run forecast. An initial forecast is made of GNP. Demand and capacity estimates are compared. Suggestions are made for checking the internal consistency of the forecast and for reconciling the various projections. Finally, several pages are devoted to estimating employment, prices and profits.

There are a number of limitations: The work on national income accounting, although well done, suffers somewhat from the fact that the most recent revision of the national income accounts is not incorporated in the text. The section on aggregative economics, attempting to cover in a matter of 200 pages a very sizable portion of macroeconomic theory at a fairly sophisticated level, leaves the reader somewhat breathless. The historical section is descriptive rather than analytical. Brevity alone precludes very effective use of the historical material to support or illuminate various hypotheses and theoretical positions advanced elsewhere in the book. For the do-it-yourself forecaster the material on "short-run outlook analysis," although excellent, will require a good deal of improvisation and research before forecasting skills of a practical nature become operational. Forecasting at the industry or firm level is not discussed.

The final chapter dealing with long-run pricing problems, while written with conviction, is highly speculative. Curiously enough, the author in discussing at some length the secular trend in the price level seems less daunted by the uncertainties of the long than of the short run. He writes: "Nothing is certain in this world, but the evidence and arguments supporting the third major count in the indictment against contemporary American price practice—namely, that it has injected a persistent inflationary bias into our economy—seems to me overwhelming. . ." While this may be true, the difficulty of obtaining convincing evidence concerning the probability of occurrence of events far distant in time is overwhelming also—seeming the more so, perhaps, because of the uncertainties and lack of agreement concerning the causes and relative importance of various factors in the *current* business situation.

Just as there is no one "best" automobile for all consumers, so there is no one "best" book for business conditions analysis. The book is admirably suited for those who want to study in a single book economic forecasting, national income accounting and the formal theory of income determination. For those who have the background and the desire to penetrate deeply into the subject

matter of economic forecasting, for those who want to explore in detail the relationship between economic theory and reality and to emerge with skills which are operationally useful, the book is, as indicated by the author, an introduction.

DONALD W. PADEN

University of Illinois

Money, Credit and Banking; Monetary Policy; Consumer Finance; Mortgage Credit

Zur Theorie des Konsumentencredits. (Theory of Consumer Credit.) By SIEGFRIED SCHIMANSKI. Tübingen: J. C. B. Mohr (Paul Siebeck), 1958. Pp. 144. DM 8.90.

This study is concerned primarily with a systematic theoretical analysis of the relationship between consumer credit (mostly instalment credit) and the national income. The analysis culminates in a series of economic models, which take the form of a number of equations, supplemented by many tables and diagrams. These economic models show, under certain simplifying assumptions, the effect of an expansion or contraction of consumer credit on consumption, investment, and the rate of saving. The book deals with cyclical as well as structural problems, and emphasizes the importance of consumer credit as a growth factor in the economy.

Chapter 1 contains a survey of the various forms of consumer credit, with particular reference to the institutional setup in Germany. In discussing the differences between consumer and producer credit, the author arrives at the conclusion that, because of the lesser amplitude in fluctuations of consumer income than of producer income, the risk for the supplier of consumer credit is by no means greater than for the supplier of producer credit.

In Chapter 2 the author analyzes the market for consumer credit on both the supply and demand side. This chapter contains frequent references to related studies in the field of consumer credit, including—besides a number of German studies—those by G. Haberler, D. D. Humphrey, A. Kisselgoff and F. A. Lutz. The theoretical discussion of supply conditions is supplemented by statistical data on the magnitude and the sources of consumer credit in Germany (Federal Republic) during the period 1952-1957. On the demand side, the analysis is concentrated on the relative importance of the various factors which determine the demand for consumer credit, notably the income level, the income distribution, the prices of durable consumer goods, the credit terms (including down payments, credit costs, and periods of repayment), and the amount of accumulated savings of private households.

Chapter 3 is entirely devoted to the construction of various economic models. It is not possible within a brief review to describe the various steps of the analysis in detail. A few remarks on the method of analysis must, therefore, suffice. The economic models are designed to show the influences of consumer credit on the development of an economy which at the starting point (without consumer credit) is in equilibrium. The focus is first on consumption,

and later on investment. Various alternative assumptions as to consumer behavior provide the basis for different models. An increasing number of economic variables (income, credit terms, etc.) are included as the analysis progresses; the effect of foreign trade and of the budget are left out of consideration, and there are some other simplifying assumptions.

Among the conclusions are the following: Depending on the assumptions that are made with regard to consumer behavior, consumer credit may lead either to a temporary or a permanent expansion (or contraction) of the national income. By intensifying income fluctuations, consumer credit has a destabilizing effect on the economy, and credit terms should therefore be controlled. The producer goods industries are stimulated not only indirectly, but also directly, because they frequently also produce durable consumer goods which are sold on the instalment plan. In a growing economy with a high rate of saving, the expansion of consumer credit may act as a useful aid in maintaining a high level of economic activity.

The practical importance of a theoretical study of this kind is difficult to evaluate. There are, first, some conceptual problems that come to mind. Is it, for instance, correct to assume that consumer expenditure is increased fully by the amount of new consumer credit, and reduced correspondingly by the amount of repayments? Can any universally valid assumptions be made with respect to consumer behavior? Second, there are great gaps in the statistical material on consumer instalment credit (even in the United States) which are an obstacle to the practical application of such economic models. Nevertheless, Schimanski's study of consumer credit should be of interest to European economists (for whom the bibliography on pp. 139-144 will be a valuable asset), and also to U.S. economists familiar with the earlier literature and the recent comprehensive studies of the Federal Reserve Board and the National Bureau of Economic Research in the field of consumer instalment credit.

EMIL G. SPITZER

Washington, D.C.

International Economics

Balance of Payments and Economic Growth. By JOHN M. LETICHE. New York: Harper and Brothers, 1959. Pp. xiii, 378. \$6.00.

Letiche's title, unlike that of many another book, is an accurate indication of his subject matter. The first part of the book is on the theory of the balancing of international payments and the second part is on some applications of the theory to international problems arising from economic development. Thus Letiche refreshingly belongs to the somewhat old-fashioned camp of economists that regard economic theory as a guide to the real world, with the test of theory being its usefulness in analyzing and securing solutions to real policy problems. He evidently does not regard theory as a refined intellectual game the main touchstone of which is the elegance of its solutions.

The book begins with a critical review of classical and current balance-of-payments theories. Letiche shows that for many classical writers induced

movements in income and expenditure were a key factor in the balancing process; this is not something newly discovered by modern writers. He makes a number of penetrating observations that both promote an understanding of these theories and bring out their limitations. For example, in discussing the theory of the effects of a devaluation he shows the very limited usefulness of the elasticities approach by pointing out that "to apply the Marshallian concept of elasticity, which assumes the constant purchasing power of money, and which has relevance only to incremental changes *along a demand or supply schedule*, to problems dealing for the most part with *shifts* in these schedules is misleading" (p. 67, author's emphasis). In a devaluation the cost and demand structures of different industries and different firms are affected differently; commodities may now become exportable that previously were purely home goods, or even not produced at all; import substitutes now become more profitable, etc. Estimates of the elasticities of supply of exports and demand for imports correct before a devaluation may be almost useless as a guide to the impact of a devaluation on the country's balance of payments, for one may then be on a new set of curves.

Finally, in integrating the positive contributions of the earlier theorists, Letiche analyzes the effects of devaluation on the trade balance under conditions of inflationary, deflationary, and neutral fiscal and monetary policies, at home and abroad. In his balancing theory Letiche shows how, according to the state of employment of factors and the monetary and fiscal policies pursued, the balancing mechanism may operate differently—in some cases the adjustment of the balance of payments to certain actions will operate through the income effect, in others through the price effect, and in others through both effects. Consequently, by finding a place for the aspects emphasized by the classical and by the neo-Keynesian approaches, Letiche provides a unified synthesis.

In the second half of the book, Letiche applies his theory to the world as it is—the real test—and his theory passes with high marks. He discusses, for example, what would be the impact of a devaluation on a semi-industrialized country which is a primary products exporter. This, of course, covers a large class of countries. He convincingly shows that devaluation would probably not induce a larger proportion of labor resources to move into agriculture but that it would become more feasible and more profitable to devote more labor to produce previously imported manufactured products and import-substitutes.

He makes a careful examination of dollar-shortage theories and concludes that "there appear to be no *structural* forces which have been operating *abroad* during the interwar period that provide a satisfactory *general* explanation of long-term imbalance of the industrial countries of Western Europe vis-à-vis the United States" (author's emphasis). Since this must have been written when the dollar shortage was still widely believed in, his theories stand the test of application well.

If the book goes through several editions, as it deserves, there are many rough spots where editing would be helpful. Chapter 2 on the writings of Isaac Gervaise contributes little to the general theme and could be transferred to an

appendix or dropped without much loss. On the other hand, too much valuable material is in the footnotes: too often a footnote provides illumination for the main argument or makes a point that deserves a better life than the dungeon-existence below the text. But these are strictly minor defects. In sum, Letiche has written a valuable book which should be most useful to student and policymaker alike.

A. M. KAMARCK

Johns Hopkins University

Foreign Trade and Finance. Edited by WILLIAM R. ALLEN and CLARK LEE ALLEN. New York: Macmillan Co., 1959. Pp. xii, 500. \$6.00.

This is a useful addition to the growing library of readings in specialized fields of economics. In this case there are some twenty-three articles arranged in five sections under the topic headings of international trade theory and policy issues, the balance of payments and equilibrium, the adjustment process: changes in prices and income, the rate of exchange and equilibrium, multilateralism and capital movements. Each section is preceded by an introduction consisting of a brief textbook-level discussion of concepts. Students who are sufficiently advanced to handle the reprinted articles may find parts of these introductions needlessly elementary. At the end of each section the editors give us their "commentary" consisting of explorations of technical points raised in a preceding article. My personal preference would have been for a critical essay by the editors, but perhaps this merely proves that editors can not please everyone.

About half of the articles reprinted in the book have been cut. The excerpting has been skillfully done so that the argument presented is complete; thus you do not get meaningless bits cut from longer works. There are, of course, some costs because of the lack of the full range of the original presentation, but they do not seem to have been inordinate in this case.

Like the American Economic Association's *Readings in the Theory of International Trade* this volume is meant to be "useful in the instruction of senior and graduate students." The level of technical difficulty of the articles is not high. Only one article, for example, refers to community indifference curves and in only the article on stable and unstable equilibria of the foreign exchanges (by one of the editors) is elementary algebra used. The geometry of reciprocal demand curves is used and is also carefully explained. Apart from formal techniques, however, the essays generally presume a degree of knowledge of international economics that would be unusual without a year of undergraduate work in the field.

It is hardly necessary (or feasible) to comment on the individual articles. One meets mainly familiar faces here, e.g., Machlup on concepts of the balance of payments, Triffin on central banking, Bernstein on American productivity and the dollar shortage, MacDougall on the dollar shortage, Friedman on flexible exchange rates, Hilgert's case for multilateral trade, Haberler on convertibility, and Metzler on tariffs and the terms of trade. Nurkse is the star performer with three appearances.

The weakest section of the book is that dealing with the theory of trade and its policy implications. In the first place it is the shortest section. This is not an allocation of space that is likely to coincide with most instructors' views of the relative importance of the topic. Moreover, none of the articles develops at any length the variations in the amount of alternative formulations of a theory of trade, nor are the criteria for judging the validity of trade theories discussed.

The exception to this statement is the article by Robert W. Stevens attacking the argument of Scitovsky *et al.* that individual countries may gain (move to higher community indifference curves) by imposing a tariff. Stevens' methodological point that classical and neoclassical writers were not concerned with national (as opposed to individual) advantage is, I believe, questionable. To be sure they were generally led to a theory of the harmony of national and individual interests and of harmony between the interests of diverse nations all achieved through individualistic action. In Scitovsky's model, on the other hand, each government acts against other national governments to increase its own domestic welfare. In both cases national welfare is a proper objective of policy and national welfare is conceived of in individualistic terms—perhaps more so in modern welfare theory than in the case of Marshall.

The trade theory section also includes Karl-Erik Hansson's, "A General Theory of the System of Multilateral Trade" which is quite worthy of being reprinted but does not constitute a general theory of trade. The section does not include an evaluation of the historical relevancy of comparative advantage theory, such as J. H. Williams' classic article that appeared in the *AEA Readings*—but then there are few such articles around.

As may be gathered from the list of contributors cited above, the treatment of the monetary aspects of international economics is excellent. Here the student may drink his fill of balance-of-payments disequilibria, dollar gaps, and foreign exchange markets. The coverage of topics is good (if it is assumed that the issues in the dollar shortage literature have not been settled by events). The viewpoints expressed are all within orthodox limits. There is no Balogh here prepared to argue for discrimination or the use of controls. The sole exception to this is Frisch's matrix demonstration that the volume of trade may, under some circumstances, be greater with rather than without payments discrimination.

The two articles on international investment experience of the past (Slater and Nurkse) are welcome additions of historical discussion to an otherwise largely ahistorical collection. It is too bad, in fact, that there is not a volume of readings, empirical and theoretical, on the development of the world economy to accompany this book for seminar purposes.

There is little doubt that this book will be widely adopted for use in advanced international trade courses including, in spite of some critical comments above, the reviewer's.

ROBERT R. EDMISTER

University of Utah

The American Economic Impact on Canada. By HUGH G. J. AITKEN, and others. Durham, N.C.: Duke University Press; London: Cambridge University Press for Duke University Commonwealth-Studies Center, 1959. Pp. xviii, 176. \$4.50.

The Canadian body politic, whenever temporarily freed of the pressure of more tangible economic and social problems, grows alarmed over the extent of foreign influence upon Canada, mostly that of the United States. In the prosperous 1950's this sentiment has blossomed vigorously; and while there is little chance of it ever leading to major substantive action it has already been a critical force in Canada's domestic political balance. In the economic sphere Canadians voice concern about how extensively American equity capital controls Canadian firms, how completely Canadian exports are tied to the U.S. market, how regularly Canadian employment follows the U.S. business cycle, and how extensively Canadian tastes are made and remade by American advertisers.

Canadian economists have generally lent their support to this concern, but only occasionally have they produced careful analyses of the impact on Canada's economic welfare of U.S. economic dominance. This is unfortunate because of the many types of theoretical and empirical analyses that could and should be done and because of the nearly complete lack of useful policy conclusions in recent studies of United States-Canadian relations.

The present volume, a bundle of seminar papers given at Duke University by seven well-known Canadian scholars, does only a little to improve the situation. The book will give a good introduction to a casually interested economist or the proverbial intelligent layman; but those who have followed the literature on Canadian-United States economic relations will find here little that is new. Furthermore, several major angles of U.S. economic influence are not even touched. The most useful pieces are those by C. L. Barber and Eugene Forsey, drawing together respectively information on the impact of the United States on Canadian agriculture and Canadian labor. H. G. J. Aitken surveys the public policies which Canada has adopted to increase the gains derived from natural resource extraction and exportation, concluding that these policies have made a difference only where Canadian producers in the aggregate have held some monopoly power in world markets. In an essay on the U.S. impact on French Canada, Maurice Lamontagne offers some insights into the relation between U.S. influence and the historic balance of Canadian political forces.

It is high time that persons writing on United States-Canadian relations were chastised for a lack of careful work on the economically significant questions involved. In the present volume only Irving Brecher says much about the need for more research. He gives an excellent agenda for further empirical study centering on the policies of businesses operating in both the United States and Canada. The other authors could well have offered something similar. Do legislative proceedings show Canadian social and economic legislation to be significantly influenced by U.S. practice? Is there evidence that U.S.

technology is adopted where it is inappropriate to Canadian conditions? Do Canadian-American businesses act in ways that help to stabilize the exchange rate? What pattern of Canadian agricultural production would prevail if U.S. farmers operated in an uncontrolled market? What price in economic welfare would Canadians have to pay in order to rid themselves of various aspects of U.S. influence? Only when these and similar research projects are tackled will our knowledge of the economic impact of the United States on Canada amount to much more than armchair observation and a battery of suspicion-ridden hypotheses.

RICHARD E. CAVES

University of California, Berkeley

British Investments in Latin America, 1822-1949. By J. FRED RIPPY. Minneapolis: University of Minnesota Press, 1959. Pp. xii, 249. \$5.00.

Many believe that the marginal rate of return on investment has been higher in the low per capita income countries than in the more developed parts of the world. In the absence of government restrictions on the flow of capital and political instability in the backward countries, capital is expected to flow from the developed to the underdeveloped countries. The Victorian era has usually been cited as the prototype of a "normal" pattern for international capital movements. From 1860 to 1914, Great Britain apparently invested about 4 per cent of her national income overseas. As the late Ragnar Nurkse wrote: "There is in America a feeling of nostalgia for the nineteenth-century environment that made this flow of capital possible. The question is: why can we not re-create that environment?"

J. Fred Rippy, professor emeritus of history of the University of Chicago, has written a book that should be read by those who are interested in the history of the international flow of capital. His book deals with two main themes: (1) the size, nature, and chronology of British investments in Latin America 1822-1949, and (2) the approximate rates of return therefrom. Rippy's book dispels many illusions about international investment in the past century.

First, the rates of return earned by British investors in Latin America were not high by European standards. The author calculates rates of return by dividing the income received by British investors in a given year by the face value of bonds or, in the case of equities, by the par value of the stock. He presents the prices at which Latin-American government issues were floated in England in 1822, 1824 and 1825. This enables us to determine the yield on the amount initially invested.

I have tried to summarize the basic information in Table 1. Unfortunately, there are certain gaps in the data. It is clear that rates of return were quite modest. One would expect a strong degree of uniformity in rates of return yielded on government bonds, given the putative financial integrity of governments. The prices of government bonds to the public (in 1822-25) ranged from 60 to 90. Hence, government bonds hardly ever yielded more than 8 per cent on the price paid. The debt record of the Latin-American governments was quite bad. At the end of 1880, £71 million out of a total of £179 million of government bonds was in default.

TABLE I

	1880	1890	1913	1928	1939	1949
1. Total nominal investment (10 ⁹)	£179	£426	£999	£1,211	£1,127	£560
(a) Per cent in government bonds	69%	46%	32%	28%	29%	31%
(b) Per cent in railroads	19	34	46	40	42	29
(c) Per cent in other business enterprises	12	20	23	31	29	40
2. Average return		4.5%	4.7%	4.4%	1.7%	2.5%
(a) Government bonds	2% on face	5	4.4	4.2		
(b) Direct investments	6% on par					
(i) Railroads			4.2	3.9		
(ii) Banking			13.4	6.1	2.2	6.0
(iii) Shipping			6.2		4.6	6.9
(iv) Miscellaneous			5.5	5.1		

Rates of return received by investors in business enterprises are more accurate reflections of the productivity of capital than are interest rates on foreign bonds. Bonanzas were made; but so were losses and moderate returns. The average annual income from the entire British investment in nearly a thousand economic enterprises in Latin America rarely exceeded 5 or 6 per cent of the par value of the investment. Capital appreciation could compensate for low earnings; but Rippey presents no data on the capital gains or losses made. The rates of return on investment in Latin-American business enterprises were not higher (on the average) than United States stock yields during the past century.

The second illusion dispelled by this book concerns the nature of the British investment in Latin America. Many have entertained the notion that foreign investment in backward countries was of the "colonial type," i.e., investment in extractive industries and plantations which produce products for export to the developed countries. According to the summary table above, this was hardly the case in Latin America. The major portion of British investment was in government bonds and in railroads. If we add the amounts invested in public utilities, then government bonds and "social overhead investments" were the major recipients of British capital. In retrospect, there was good reason to invest in extractive industries rather than in government bonds or in "social overhead capital." Rates of return on investment, on the average, were higher in mining, nitrates and ranches than in railroads and public utilities. Moreover, bonanzas were made in the "colonial types of investment."

Economists should examine the directions and *ex post* rates of return earned by foreign capital during the Victorian era. In retrospect, was foreign investment more profitable than domestic investment? Rippey has made a good start. His work should be extended to other areas; and the analytical tools of economists should be applied to such studies.

J. L. STEIN

Brown University

Der induzierte Kapitalexport. By KLAUS JACOBI. Zürich: Polygraphischer Verlag AG, 1959. Pp. viii, 106. 12.50 sw. fr.

Much of the balance-of-payments literature of the last three decades has been concerned with the identification and/or meaning of a balance-of-payments disequilibrium (see, e.g., works of Iversen, Nurkse, Meade). The capi-

tal balance is considered the crucial sector and its elements are usually divided into two categories—autonomous and induced (or accommodating) capital movements. The former includes all the capital transactions which take place without regard to occurrences in the current account sector, while the latter includes movements caused directly by changes in the current account and/or in the autonomous capital sector.

In the first third of this monographic essay, Klaus Jacobi meticulously reviews contemporary interpretations of the capital sector of the balance of payments. In the remainder of the essay, he examines the various conditions under which induced capital exports have taken place, their significance in expanding trade, and their effects on the economies of the creditor and debtor countries.

Ever since the breakdown of the gold standard, there has been a quest for internal stability, even at the expense of external disequilibrium; restrictions on free trade have grown via increased quantitative restrictions and inconvertibility; and there has been a decline of free capital movements to needy countries due to lack of confidence in their economic and political stability. These factors and the postwar rigidity of exchange rates have brought about an increase in the relative importance of induced capital movements which are either directly or indirectly sponsored by governments. Jacobi divides induced capital exports into those of a bilateral and those of a multilateral nature.

Induced capital exports of a bilateral nature can occur in a number of ways. First, there are the clearing arrangements between two countries where private exporters of the creditor country are "forced" to bear the burden of an induced capital export. Under such a system, the government of the creditor country recognizes the claims of its exporters, while the government of the debtor country receives the payments of importers in local currency. But the debtor country will pay its debts only when it is in possession of the creditor country's currency. Only then will the creditor government, in turn, pay the exporters. Thus the burden is thrown on the exporters who are forced to extend credits of indefinite duration. The author gives an example of such a relationship between Switzerland and Bulgaria in 1949-53, where at one time "waiting periods" for repayment to exporters were as high as 35 months.

We have here the peculiar relationship in which the creditor is the private exporter and the debtor is the government of the importing country. Though such a bilateral arrangement could lead to an expansion of trade, it could also lead to a severe contraction if "waiting periods" for the private exporter should be overextended. It could also bring about contractionary forces inside the creditor country due to a curtailment of exports and due to the lack of capital for domestic expansion because of the forced expansion of credits to the foreign country.

A second type of bilateral arrangement consists of credit extensions by the government of the creditor country. In this case exporters are paid by their governments immediately. This method can be used by a government for purposes of domestic employment-creation by spurring exports, but it could also under certain circumstances lead to inflationary pressures since there is a decrease in the domestic circulation of goods, accompanied by a creation of credit by the government. A third type of bilateral relation is the "swing

credit" arrangement, where each state obligates itself to finance its partner's deficit up to a certain agreed-upon sum.

Jacobi's principal example of induced capital exports in a multilateral context is taken from the experience of the European Payments Union, with its provision for automatic credit extensions by net surplus members. He believes that this experience has shown that induced credit extensions are ultimately transformed into long-term capital exports for a number of reasons. An EPU-type of arrangement forces member countries, whose previous trade structure was not of a nature to have a balance within the EPU region, to change the direction of their trade in order to accomplish a balance within the Payments Union area. Such a change often requires long-term credit arrangements. Many countries will always put domestic goals ahead of the objective of a balance with the Payments Union, and if domestic policy leads to external imbalances, induced capital movements through extensions of credit will have to be of a long-term nature.

Jacobi notes that induced capital movements often act in a perverse way. He cites some examples during the EPU experience when induced capital moved from capital-poor to capital-rich countries, i.e., from countries with high interest rates and internal stability to countries with low interest rates and boom conditions. The former is a surplus country and is forced to export capital through the EPU mechanism. Induced capital movements could in most cases bring about remedial forces via "imported inflation." Under EPU arrangements the creditor country received part of its net surplus in gold and dollars, thus creating the possibility for increased domestic money supply, and most of the credit extended by the state was monetized internally. Thus, with an increased money supply and a drain on goods in circulation because of net exports, there is the possibility of inflationary forces appearing in the creditor countries, which could produce an adjustment in the external balance. Unfortunately, most creditor countries, like Germany, will resist such inflationary imports by counteracting them and thus stunting possible self-induced adjustments.

Jacobi is convinced that adjustments through changes in the domestic buying power of the surplus country's currency is a political impossibility. Therefore, like many other European economists, he is convinced that a resort to flexible exchange rates is the only alternative left.

Although his reasoning is impeccable, the reviewer questions his pessimistic outlook. His judgment seems to have been influenced too much by the imbalances developed by European countries in the early 'fifties. But what is wrong with induced capital exports through an EPU-type system or bilateral arrangement, if they go to less developed European and/or overseas countries? Even if they turn out to be long-term in character, i.e., even if imbalances in the noninduced sectors are of long duration because of development programs, should not European developed economies suffer such induced capital exports and thus make a contribution to the development of underdeveloped countries?

WERNER BAER

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Business Finance; Investment and Security Markets; Insurance

Portfolio Selection: Efficient Diversification of Investments. By HARRY M. MARKOWITZ. Cowles Foundation Monograph 16. New York: John Wiley, 1959. Pp. x, 344. \$7.50.

This monograph extends and amplifies an important earlier paper, "Portfolio Selection" (*Jour. Fin.*, March 1952, 7, 77-91), which proposed a mathematical theory of diversification. Using the variance of expected returns as a risk criterion, the paper sketched an approach for selecting a class of efficient portfolios that would dominate all others; every inefficient portfolio would be clearly inferior, offering lower returns at no less risk or more risk for no greater returns than some efficient portfolio. The monograph expands this idea, relates the selection technique to linear and nonlinear programming, and mentions several alternative risk measures—especially the semivariance, discussed at length. This much will appeal to econometricians and to statisticians interested in decision theory. But the book contains much more, and for this I can see no obvious audience.

The preface says: "Although the techniques are mathematical in nature, the monograph is written primarily with the non-mathematician in mind." Indeed, concern for the nonmathematician is painfully obvious at the start, but it disappears. Part I is an elementary introduction sufficient to give the nonmathematician an idea of what *Portfolio Selection* is all about, and here he should stop; yet Markowitz attempts to push him on through Part II, which the mathematically sophisticated are explicitly advised to avoid, with a tediously labored treatment of averages, dispersion, mathematical expectation, and rates of growth, aimed at readers without knowledge of probability and statistics, or even of elementary algebra. Thus (p. 87):

It is shown in high school algebra texts that, if A and B are any two numbers,

$$(A + B)^2 = A^2 + B^2 + 2AB.$$

That is, the square of (the sum of A and B) equals (the square of A) plus (the square of B) plus 2 times A times B. For example, if A = 3 and B = 4, then

$$(3 + 4)^2 = 7^2 = 49 \text{ and} \\ 3^2 + 4^2 + 2 \cdot 3 \cdot 4 = 9 + 16 + 24 = 49,$$

illustrating that the number resulting from the operations $(A + B)^2$ is the same as the number resulting from the operations $A^2 + B^2 + 2AB$.

But after this elementary interlude, Part III defines and explains how to obtain efficient portfolios for readers who either know or are willing to learn matrix algebra—there are 16 pages of introduction on manipulating matrices—and preferably for those well up on linear programming. Part IV, on "Rational Choice Under Uncertainty," is perhaps easier than Part III, but it is still mathematical and in no way suited for the neophyte. For whom, then, is this book written? Hardly for anyone requiring the intellectual spoon-feeding offered in Part II, for he has virtually no chance of getting through.

Also, the book seems intended for econometric theorists and not for such practical financiers as can understand the mathematics. The subject is practi-

cal, and Markowitz drops hints of applications; but the treatment is theoretical. Thus Chapter 11 on "Utility Analysis over Time," which the practical financier might expect to find accompanied by "Railroad Analysis over Time," comprehends another kind of utility. Moreover, the theoretical contributions include statistical demonstrations of principles long known and practiced. Chapter 5 shows how diversification offers little protection when the returns from securities are highly intercorrelated, and how protection can be increased by including in the portfolio securities whose returns show a low correlation with the average. Translated into workaday financial language for the non-mathematical reader, this means that a portfolio should not consist solely of stocks that typically move together, presumably with the business cycle. And indeed, informed portfolio managers generally recognize that proper diversification requires a variety of industries as well as a number of issues, bonds and highgrade preferreds to provide a cyclically insensitive component, and countercyclical stocks when available. The last several decades have seen the development of formula timing plans as a means of coping with cyclical movements; and of these, dollar averaging provides those in the process of building portfolios with a device for diversification over time. But Markowitz does not discuss timing plans.

Markowitz' nearest approach to practical advice on portfolio management is to suggest that analysts form probability beliefs about future performance of securities and then process these on an electronic computer. He does not, however, explain how to acquire the beliefs. Instead (p. 28):

We shall not discuss the procedures of the security analyst in arriving at reasonable beliefs about securities. Works on security analysis are available. [Here is a citation to Graham and Dodd's *Security Analysis*.] The topic of this monograph is Portfolio Analysis. A portfolio analysis begins where security analyses leave off.

But Markowitz has left a gap, miles wide, between the point where down-to-earth security analyses leave off and the point where his analysis begins. Graham and Dodd have much to say on the adjustment of income for non-recurrent items, the detection of excessive depreciation, the preparation of a cash flow analysis, and even on the selection of suitable price-earnings ratios; but they do not offer suggestions for translating financial statements into probability beliefs suitable for feeding into a computer. If Markowitz is unwilling to bridge this gap, may we not conclude that any thought of practical application is premature?

Moreover, Markowitz offers no argument that personal probability beliefs provide a reliable basis for portfolio management, or that they are worth the cost of processing electronically. His argument rests on the concept of the Rational Man, who must act consistently with his beliefs. But the history of Wall Street suggests that such consistency may be unwise. There seems to be a human tendency, afflicting insiders as well as outsiders, to become progressively optimistic during a bull market and progressively pessimistic during a bear market—a tendency that leads to buying high and selling low, and often to financial disaster. One of the reasons behind the development of formula timing plans has been the desire to counteract this tendency with a set of

mechanical rules that will force the portfolio manager to act inconsistently with his probability beliefs. Far better to be an inconsistent success than a consistent failure!

In Chapter 13, "Applications to Portfolio Selection," Markowitz projects his theories far forward, possibly to the twenty-fifth century. His ideal is a Rational Man equipped with a Perfect Computing Machine, who regards portfolio selection as a single department of consumption and treats the whole as a problem in utility maximization. Of course, he admits that the Rational Man does not exist at all and that the Perfect Computing Machine will not exist in the foreseeable future, but the image of these nonentities seems to have colored his whole work and given it an air of fantasy.

DAVID DURAND

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Financing of Economic Activity in Canada. By WILLIAM C. HOOD. Including: *A Presentation of National Transactions Accounts for Canada, 1946-1954*, by L. M. Read, S. J. Handfield-Jones and F. W. Emerson. Royal Commission on Canada's Economic Prospects. Ottawa: E. Cloutier, 1959. Pp. xv, 700.

This study is an extremely valuable analytical survey, albeit somewhat prolix, of the working of the capital market in Canada. The capital market is defined as "the set of contacts between buyers and sellers who effect exchanges involving non-monetary financial assets" (p. 11). So defined, the capital market includes the short- and long-term money markets, the new issue market, and the markets for particular types of securities such as the government bond and the stock markets. In short the capital market includes all arrangements and institutions having to do with the financing of economic activity in Canada.

In furtherance of the definition adopted, the author has an introductory chapter on the postwar financing of economic activity, followed by detailed discussions of the problems involved in the financing of the consumer, the farmer and business enterprise, in the work of financial intermediaries, in the operation of commercial banks and in the credit policies of the central bank. A final chapter is devoted to imperfections in the capital market and to needed remedial action.

The volume concludes with a section on national transactions accounts for Canada, set forth for the first time in this study. These represent an extension of the income and expenditure accounts in two directions: The sector classification is more detailed, and financial transactions are recorded as well as flows of real goods and services. The national transactions accounts differ from the American flow-of-funds analysis in that, in the Canadian accounts, all transactions included in the national accounts are to be found in the national transactions accounts, including imputed transactions and accrued income and expenditure. Data are presented for 11 main and 22 subsectors for a nine-year period, 1946-1954.

The author has made many contributions towards a better understanding of the Canadian capital market. These include, *inter alia*, excellent discussions of the financing of Canadian business firms by type and size; the influence of the

corporate income tax on business decisions; the economics of depreciation reserves; the effect of the absence of a capital gains tax on stock ownership; the importance of foreign direct investment; the issues involved in the financing of small business; the principles which should govern life insurance company investments; the work of the Industrial Development Bank; and the influence of the central bank over commercial banks and the capital market. In developing these topics the author has brought together all available Canadian data, which makes the study an extremely important source-book.

The author concludes that there are various imperfections in the capital market and suggests certain remedial measures. These imperfections would be less significant, for example, if corporations were required to give more information about their financial operations, if life insurance companies and trust companies were permitted to invest a larger proportion of their assets in common stocks, if life insurance companies invested at longer term, if commercial banks were encouraged to increase the proportion of their holdings of urban mortgages, and if the rates of interest on loans insured or granted by governmental agencies were not subject to administered ceilings. Investment trust, common trust funds and pension funds, he feels, are contributing through their operations towards a more perfect capital market. And finally the capital market would work better if consumers were more sophisticated investors. They seem totally ignorant of the cost of funds, particularly in the area of consumer credit, and this distorts the allocation of funds and frustrates the efforts of monetary authorities to control credit. He would compel finance companies and other institutions in the field to state, in clear form, the cost of instalment contracts to consumers.

He concludes that on the whole the Canadian economy has functioned markedly well in the postwar period. There has been no major recession, population and real output have grown, consumption per head has increased. While large sums have been spent on industrial capital, large sums too have been devoted to social capital. Though great success has been achieved in these areas, the economy unfortunately has experienced sharp inflation. Throughout his study the author calls attention continuously to private and public policies which have either aggravated or restrained inflation. No small part of this inflation was generated by the policies of Canada's neighbor to the south.

B. H. BECKHART

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Corporation Finance. By RICHARD C. OSBORN. New York: Harper & Brothers. Pp. xv, 637. \$6.50.

Textbooks in the field of business and corporation finance have in recent years tended to follow one of two basic approaches: the traditional, institutionally slanted, descriptive; or the more recent internal or administrative. Professor Osborn believes the older approach more important for the introductory course, anticipating that a large proportion of students will not go much farther into the field. "The internal functional analysis becomes important, but only after an understanding of the more inclusive aspects of a corporation has been attained" (p. xiv).

The general outline thus covers the major facets of business finance: forms of organization, corporate securities, capital structure, promotion, investment banking and security markets, working capital, income and its reinvestment or distribution, expansion, adjustments, and failure and reorganization. The author presents "generally accepted doctrines" and hopes to avoid controversial discussions, leaving the latter for advanced specialists in the field or reference to selected readings at the end of each chapter.

Several changes in the standard treatment are introduced: more emphasis on financing of newer forms of transportation, a separate chapter on the financial problems of small business, and a final chapter on the influence of "comprehensive macroeconomic influences" on corporate financing. An instructor's manual (112 p.), with answers to questions and problems in the text and some objective-type questions, is available to users of the text. Osborn has written clearly and in a very readable and direct style. The volume deserves serious consideration by those who prefer the particular approach of the author. Students should learn much, with a minimum danger of becoming confused or of acquiring erroneous information.

The final chapter, which Osborn calls a "unique" contribution, deserves some comment. The discussion moves from the role of individualism to collectivism and consequent management of the economy for the collective benefit, despite potential inflation. "Regardless of disagreement as to aims and techniques that will prove successful, the principle of centralized control has become firmly established, whether within the framework of a capitalistic or any other form of economy" (p. 608). The responsibilities of the federal government in economic affairs through the Employment Act of 1946 and the Council of Economic Advisers are outlined as an introduction to sections on "Collective Action and the Corporation" and "Influence of Government Action on Business Financing." Osborn concludes by stating that if business creates its own stability through regularizing investment, more bonds can be issued and the resultant leverage will permit lower costs of equity financing. The alternative is coercive action by government (pp. 620-21). This reader opines that the treatment would truly have been unique had it provided a method whereby regularization of business investment could be achieved without collective action.

FRANCIS J. CALKINS

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Business Organization; Managerial Economics; Marketing; Accounting

Executive Compensation. By DAVID R. ROBERTS. Glencoe, Ill.: The Free Press, 1959. Pp. x, 189. \$6.00.

The corporation executive has not yet been fitted into the main body of economic analysis. This is true of the function he performs (and the conditions under which he performs it) as well as of the compensation he receives. It is a major virtue of this book that it sets out explicitly to fill this gap. While it must be said that the book does not fully succeed in this ambitious objective,

which the author would have been wiser not to set forth so boldly in his preface, it does make a useful contribution to our knowledge about executive compensation; and, perhaps even more important, it raises a number of challenging questions which, if not always satisfactorily answered, should encourage further work in an area which has been too neglected by economists.

The larger part of Dean Roberts' study is concerned with an empirical investigation of the relationships between executive compensation and other possibly relevant variables: for example, sales, dollar profits and profit rate, type of industry, and geographic location. Using modern statistical techniques, he concludes that the absolute level of compensation is related to company size but not to the other variables which are sometimes cited. In particular, if allowance is properly made for company size, executive compensation does not vary significantly with profitability of the firm.

The most interesting part of this study comes in the last third of the book. Here the author attempts to develop a theoretical explanation of executive compensation and relate it both to his empirical findings and to some of the existing literature. What is even more useful, he offers a very suggestive analysis of the market for executives. While the findings may not be altogether new, I have not seen them pulled together in this way before, and the implications which are drawn are of considerable interest. For example, there is relatively little movement of executives among firms; what movement there is is related to personal characteristics rather than to differentials in compensation. Hence market forces of the usual sort play a very limited role in determining the level of compensation in individual companies, at least in the upper ranks, and there is not much of an association between available measures of "entrepreneurial productivity" and compensation. Further, increments of compensation above the levels prevailing in particular firms have limited incentive effects. One suggestive inference is that the difficulty of obtaining trained executives from other firms may be a significant impediment to the entry of new firms in industries where initial large size is required, and thus is another factor, in addition to those usually mentioned, tending to foster concentration.

One of the important virtues of this book lies, in a sense, in its methodology, which presumably can be attributed to the author's training and experience at the Graduate School of Industrial Administration, Carnegie Institute of Technology. Here a "practical" business subject is explored not only with the tools of statistical and economic analysis but also with some help from sociology and social psychology. This sort of analytical, empirical, and interdisciplinary study is clearly to be encouraged.

R. A. GORDON

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Industrial Organization; Government and Business; Industry Studies

Monopoly in Economics and Law. By DONALD DEWEY. Chicago: Rand McNally and Co., 1959. Pp. 328. \$5.75.

The fact that this "small treatise" on monopoly is a "highly personal work" makes the job of review both easier and more difficult: easier because the

author has a story to tell which he does tersely and with verve; more difficult because of omissions, different intensities of treatment, and varying levels of sophistication. In fact, it is difficult to locate the level to which this book is addressed. But through it all the skepticism (or is it caution?), the occasional unorthodox proposition, and the recitation of the overlooked fact titillate.

The task of economists in the development of monopoly policy is described as that of providing policy-makers with "an increasingly accurate picture" of what the "business world is 'really' like" (preface). The task of economists to develop standards by which structure or performance is to be evaluated is not mentioned; no reference is made, therefore, to the extensive literature on workable competition, which is, though, mentioned several times as a condition to be achieved. This is not necessarily a fatal omission in a personal book. It is, however, quite precarious for a book whose most likely "special claim to novelty . . . derives from the conviction that economists and lawyers who are interested in monopoly as a policy problem cannot get along well without one another" (preface).

The contributions of economists are discussed under the theory of cartels, the theory of consolidations, and their respective refinements. The theory of cartels summarizes the conventional approach. The chapters on consolidation explore primarily the relative importance of scale economies and of the drive for market power. Dewey's concern in the second chapter on refinements of monopoly theory is refutation of the proposition "that in imperfect competition a policy of *laissez faire* must lead to a no-profit-no-loss equilibrium in which each firm is of less than optimum size" (p. 88). In the course of this treatment he defends Chamberlin's thesis that monopolistic competition is not the same as imperfect competition.

Monopoly at law accounts for about two-thirds of the book and is the most interesting part. The common law conception of monopoly policy in both this country and Great Britain is explored. From this Dewey concludes, among other things, that typically the rule of reason has been used by American courts to validate both direct and ancillary restraints of trade—a victory too easily won.

A quite brief summary of the passage and statutory standards of the Sherman Act is followed by a longer consideration of the enforcement procedures during which opposition is declared to both criminal and treble damage suits. More than a third of the book is devoted to the development of antitrust case standards in terms both of what the courts said and what they did. In this treatment the following headings are employed: cartels, unfair competition, mergers, good trusts, and labor monopoly.

As is generally recognized, the historical role of unfair acts of competition in the formation of large companies at the turn of the century led Congress in the Clayton and Federal Trade Commission Acts to assign to antitrust agencies the sometimes incompatible tasks of preserving both competition and competitors. This ambiguity was aggravated by the Robinson-Patman Act. According to Dewey, the "major inarticulate premise" of this "execrable concession to small business groups" is "simply wrong; most of the prices in the

world are not equal to the seller's average cost of production plus a 'fair' markup" (pp. 198-99). It could be, however, that his articulate major premise of marginal pricing is less relevant to the world as it "really" is than a full-cost pricing assumption.

In spite of the brave words of the 'forties, the law of good trusts is found to prevail; "so far as trust-busting is concerned, the new Sherman Act has become indistinguishable from the old" (p. 254). This result, however, was "inevitable" given judicial reluctance to disturb private [property] rights in the interest of promoting nebulous public goals" (p. 254). In fact, "courts are allowed to retain the judge-made remedies of dissolution and divestiture only because their conservative bias is good surety that these remedies will not be much used" (p. 254). Because of this powerful conservative force, Dewey concludes that the liberal must place less reliance on attempts to change market structure. Where then the liberal? For the future Dewey seems to suggest that the best alternative to trust-busting is the adoption of "guerilla tactics"—"in unspectacular Fabian sallies, notably the blocking of doubtful mergers, elimination of the secondary boycott, close scrutiny of the awarding of government favors, and curtailment of the patent privilege" (p. 256).

The law of labor monopoly rates one of the longest chapters. There is little doubt that Dewey considers this a sorely neglected area. His opposition is not to a double standard in antitrust policy but rather to the encouragement of industry-wide bargaining under the Wagner Act (a "damaging" defeat to the opponent of monopoly) and to the survival of the secondary boycott after the Taft-Hartley Act.

In a helpful chapter on monopoly policy in Great Britain Dewey gives a brief but well-formed explanation of the reasons for the British attitude toward monopoly. He cautions against making "too much of the difference" between such policies in Britain and the United States—although they are recognized as "real enough"—in the limited context of explaining the over-all performance characteristics of the two economies (pp. 298-99).

ROBERT E. SMITH

University of Utah

Risk and Technological Innovation: American Manufacturing Methods during the Nineteenth Century. By W. PAUL STRASSMANN. Ithaca: Cornell University Press, 1959. Pp. x, 249. \$4.00.

What has been the role of the entrepreneur in the process of technological innovation? In particular, how much risk has been involved in the innovating process? Professor Strassmann examined the history of technological innovation in four important American industries during the nineteenth century in order to assess the divergent views which have been held. For example, he contrasts the viewpoint of Schumpeter with that held by Veblen. Schumpeter emphasized the creativity and riskiness of the innovating entrepreneur's undertaking; Veblen held that the entrepreneur's role was at best permissive, not creative, with regard to technical innovations and that, at least in this

activity, little risk was run, particularly during the latter part of the nineteenth century. Strassmann concludes (p. 4):

... that both Schumpeter and Veblen were partly right and partly wrong. The leading promoters of new manufacturing methods were neither gamblers nor passive exploiters of the creations of others. They were a creative factor in economic development; but, by and large, they proceeded with a degree of caution that, with certain exceptions, reduced the chance of error to negligible proportions.

Strassmann defines and uses the term "risk" as a synonym for what some economists have chosen to call "uncertainty": the chance of loss involved in an act of innovation is not (ordinarily) known in an actuarial sense. However, although the uniqueness of any given act of innovation makes impossible the application of the laws of probability in a strict sense, Strassmann emphasizes that the innovating entrepreneur is ordinarily able to predict, with a greater or lesser degree of precision, the behavior of many of the factors which will determine the outcome of his attempt.

Four "case studies" are presented in order to determine the role and extent of risk-taking of the innovator during the nineteenth century: iron and steel, textiles, machine tools, and electric power. In all cases the focus is on innovations in techniques and equipment rather than on product innovation. The author is primarily interested not in the subjective estimates of risk on the part of innovators, but on what amounts to an *ex post* evaluation of the objective riskiness of innovating activity. He does, however, point out the frequency with which people in a given industry viewed those introducing innovations as very daring (indeed, often "insane") risktakers. Unfortunately, he does not always keep clear the distinction between the subjective (contemporary) evaluation of risk and his own estimation of the "real" risk facing the innovators in each of the four industries.

Strassman identifies and assesses the importance of the following types or sources of risk: *Interference risks*—the chance that an innovation may fail because of successful resistance to its introduction by those threatened by it. Lack of effective labor organization and continued growth of employment opportunities meant that this form of interference risk was insignificant. The patent system, at least until the latter part of the period (when patents became important, particularly in electric power equipment), did not constitute a major interference risk. And business rivals, while occasionally successful in providing an irritant, did not succeed in interposing serious interference to innovations.

Customer risks were likewise unimportant during the nineteenth century. New types of equipment and improved products were accepted quickly by customers in most cases. The exceptions are not explained so much by ignorant loyalty to old, tried and true ways of doing things as to lack of quality control and a resulting unpredictability inherent in the innovation at the time of its first introduction.

Nor were innovating firms particularly threatened by *timing risks*—the introduction of an innovation coinciding with a business depression. Certainly

the innovating firm did not suffer any more than any other firm from this source, nor in fact does Strassmann find that many innovations failed because of timing in the industries he examines.

The most serious type of risk which innovators faced were the *production risks*—the chance that the new technique wouldn't work at all, would be much more costly than expected, would be unusable because of the insufficiency (in the consuming industry) of the required labor skills and/or input materials. One difficulty this reviewer has with Strassmann's discussion of this type of risk arises from an apparent failure always to recognize the distinction between invention on the one hand and innovation on the other—a distinction the author makes clearly elsewhere. Specifically, while I am persuaded that the lack of trained scientists and engineers and their skills was important, I would argue that this lack was more important in explaining the nature of the *inventive* process (particularly during the first part of the nineteenth century) than in explaining the nature of the so-called production risks facing the innovator.

The studies of each of the four industries are well done and interesting, and a very complete bibliography has been included. Though one familiar with the history of any of these industries will find little that is new, the author is successful, in so far as the facts available permit, in assessing the degree of risk and its sources (or lack of) in each case. Strassmann is aware of the danger that the record of successful innovations is more complete than that of failures. But for the industries he has studied the records are complete enough for his purpose.

As he emphasizes, the outstanding characteristic which emerges is the relative caution of the innovators—though many of their contemporaries felt they were taking great risks. While Strassmann shares Schumpeter's view that innovators played a significant role in the growth of this country's economy during the nineteenth century, he does not find this breed to have been particularly daring. In fact, given the objective riskiness, he concludes that innovators and potential innovators and investors were irrationally cautious in their assessment of the probability of failure and their underestimation of the profitability of successful innovation. The latter was due in particular to a failure to recognize what Strassmann finds to have been a pervasive phenomenon, namely, the reciprocal complementarity of innovation within industries and among industries.

I was struck by one historical note of contemporary interest: the present importance of the government in promoting invention and innovation in the military field has a parallel in the early development of the machine tool industry which owes its start primarily to the government's demand for weapons and willingness to support what we have come to call "R and D." Certainly developments in such fields as aeronautics and electronics, primarily sponsored by the Defense Department, have had and will continue to have a significant impact on nonmilitary products and industries.

WILLIAM M. CAPRON

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Razmeshchenie chernoi metallurgi SSSR. (The Location of the Iron and Steel Industry of the USSR). By R. S. LIVSHITS. Moscow: Academy of Sciences of the USSR, 1958. Pp. 375.

This book is one of dozens of Soviet monographs published every year about the economics of the Soviet iron and steel industry. In addition to books on various economic aspects there are hundreds of technical and scientific books published annually, each of which contains varying amounts of economic information and analysis about Soviet steel, not to mention thousands of periodical articles on these topics. Public and private enterprises are attempting to abstract and translate the more important journal articles, but they cannot begin to translate the ever-growing mountain of books. This review therefore, will interest primarily the small but increasing band of U.S. economists who read Russian. Mme. Livshits' work is important because it is the first full-length monograph in 26 years to be devoted exclusively to the location of the Soviet iron and steel industry.

It can be criticized on a number of grounds. It contains not a single map. Furthermore, the theoretical discussion is confined to unconvincing criticism of Western location theorists such as Weber and Predöhl. But rather than dwell on shortcomings, this reviewer will point out certain positive elements that might be useful to American scholars.

Historians and students of Soviet economy will be interested in the chapters on the location of iron and steel in prerevolutionary Russia and the Soviet period up to 1940. They will find statistics about the production of pig iron, steel and rolled metal in all of the important iron and steel plants in Czarist Russia, and a wealth of data about the plants, workers, labor productivity etc., for the years 1890, 1900, and 1913. Chapter 4 alone has 36 statistical tables dealing with the interwar period. Of the 14 tables in Chapter 5 the most interesting gives the regional distribution of steel production for selected years from 1913 to 1956. The emphasis of Chapter 6 is on the need to raise labor productivity; and for the first time a few postwar employment figures for the iron and steel industry are made available. The last third of the book deals with problems of the future development of the industry.

The latest data on unit costs of production of iron and steel products in the United States were published in abbreviated form in the early 1920's. Even these figures were given only in very broad cost categories. As Bela Gold puts it, "Sound thinking about industrial cost-price relationships has been seriously handicapped by the secrecy which necessarily veils individual company data and by the striking scarcity of research dealing with manufacturing cost at more broad levels. As a result, businessmen and economists have been forced, in dealing with immediate problems of policy, to bridge over these factual voids with an array of assumptions." Mme. Livshits, by contrast, has packed her book with data on production costs and the cost of shipping products to primary markets. Table 75, for example, gives a breakdown of the costs of producing one ton of conversion pig iron in 13 of the largest Soviet iron and steel plants for the years 1940, 1955, and 1956. The range in 1956 was from 101 to 521 rubles per ton. Seven of these plants, including the extremes, were visited by the U.S. iron and steel delegation in 1958. Their report

(*Steel in the Soviet Union*, American Iron and Steel Institute, May 1958) provides the technical and economic data needed to understand this pattern of Soviet production costs.

Two books by another Soviet economist carry on the cost analysis in much greater detail: D. L. Maizel's, *Organizatsiia, planirovanie i finansirovanie kapitalnogo stroitel'stva v cherno metallurgii* (Organization, Planning and Financing Capital Construction in the Iron and Steel Industry), Moscow 1957; and his *Sebestoimost' chernykh metallov* (Costs of Iron and Steel), Moscow 1958. We are, therefore, in the interesting position of having both detailed costs and price data as well as technical information about a key Soviet industry, but we lack the corresponding data about any Western steel industry, which we need as a basis for comparison.

M. GARDNER CLARK

Cornell University

Land Economics; Agricultural Economics; Economic Geography; Housing

Twenty Years of Public Housing: Economic Aspects of the Federal Program.

By ROBERT MOORE FISHER. New York: Harper and Brothers, 1959.
Pp. xiii, 303. \$6.50.

The echoes of the frenetic controversy over "socialized housing" prompt the reader to reach hopefully for this volume in search of a definitive answer. He will not find it; but the cautious nonpartisanship of the author does not effectively reduce the usefulness of this comprehensive survey of the 1937 United States Housing Act in operation.

After an abortive start, the federal public housing program got under way in 1937 and has resulted in the demolition, closing or repair of nearly 300,000 substandard urban dwellings. In 2,700 active housing projects in 110 localities, some 534,000 low-income families of former slum dwellers are presently housed. The author traces the origins of the public housing movement and discloses the complex features of the federal program with full statistical report on its accomplishments and costs. Giving recognition to the controversial nature of the definition of "substandard" housing, he considers the persistence of substandard housing in our urban areas as a challenge to the ability of free enterprise to meet the housing needs of society. In 1950, 5.6 million urban dwelling units or 22 per cent of our housing stock, were substandard. It is revealing that nonwhites occupied only one-quarter of the substandard units; that slum tenements were the exception, for three-fifths of the units were in one- and two-family structures; that one-third of the bad housing was occupied by home owners; and that among low-income families, with incomes below \$2,000, 60 per cent lived in standard housing. Another interesting fact is that a substantial proportion of the occupant families in substandard housing, up to three-fifths, were paying a lesser proportion of their income for rent than generally accepted norms and could afford to occupy better accommodations.

The chapters dealing with the costs of public housing to federal and local

governments are thorough treatments of the subject, but frustrating in their conclusions that the cost really can't be measured for reasons that are analytically sound but too involved to be summarized here. Fisher suggests that costs are higher than they need be by reason of the annual contributions subsidy formula. The "annual contribution" of the federal government is determined by the difference between the yearly debt service on the local borrowings for project construction and the rental revenues above project operation costs. Thus larger capital expenditures or higher operating expenses are met by larger contributions and there is "no financial incentive to local authorities to build or manage units at lowest costs consistent with long-term needs."

The study throws some light on accomplishments of the program in eliminating substandard housing. However, it appears that at the present rate, it will take some three centuries to "eradicate all substandard accommodations existing inside standard metropolitan areas in 1959." This is not to say that the elimination of 300,000 such units is not an admirable accomplishment; but so vast a task, in the author's opinion, will require not only continued public action but greatly increased local interest and participation. It is a defect in the current program that the original provision requiring the "equivalent elimination" of one substandard dwelling for each new one provided has been so weakened by law and regulation that it is virtually inoperative.

Fisher amply illustrates the dilemma of the local housing authorities in administering the ability-to-pay basis for establishing rents against the objective of housing low-income families. Low incomes mean low rents and thus high subsidies. In periods of rising incomes, prosperous tenants whose higher rents reduce the subsidy are required to move to make way for families of lower incomes who create larger subsidy burdens. In 1957 the admission income limit of a typical project was \$2,800 yearly; families whose incomes increased by as much as 25 per cent, to \$3,500, were required to move out.

This book is well written, amply documented, comprehensive in coverage; it identifies the issues and points up deficiencies and limitations in the public housing program matched by counterbalancing data on accomplishments. No other objective treatment of equal scope has appeared to provide the basis for an economic evaluation of the public housing program. The study's limitation is that it provides a basis for an evaluation but somehow fails to add things up to a conclusion.

RICHARD U. RATCLIFF

University of Wisconsin

Labor Economics

Theory of Wages and Employment. By ALLAN M. CARTTER. Homewood, Ill.: Richard D. Irwin, 1959. Pp. xii, 193. \$5.00.

At only slight risk of overstatement, one may say that this book will appeal to that perhaps largely mythical group of economists known as "marginalists" and that it will prove somewhat distressing to the more readily identifiable

group of antimarginalists. The large body of academically cautious who tentatively accept marginalism in lieu of something better will probably feel that Cartter has gone too far in his wooing of this now elderly lady. A less ardent defense, with more space devoted to the nature of evidence which Cartter finds so convincing, would probably have been more influential.

Cartter's book is certainly not without virtue—the reader knows where Cartter stands, the presentation is generally lucid and seems to strike the right degree of brevity. The level of the discussion is probably appropriate for the average first-year graduate student. Some background in such matters as indifference analysis and Keynesian economics would be helpful to the student reader. On the other hand, too much background in industrial relations might prove embarrassing to some of Cartter's contentions.

Roughly the first half of the book is devoted to traditional marginal productivity analysis in a closed economy. After an appropriate consideration of the nature of theory, Cartter proceeds to the Clarkian and Marshallian versions of marginal productivity, the problem of the exhaustion of total product, and the meaning of the marginal revenue product. Selected criticisms of the theory are then taken up and often seen to be the result of short-run applications of an essentially long-run argument. Two chapters are then devoted to such matters as oligopoly, technically fixed requirements, assembly lines, shift operations, supply curve problems, monopsony, exploitation, and variable cost curves that decline to "capacity."

Part II opens with a consideration of some models of trade union behavior, a discussion characterized by the use of Fellner's trade union preference functions which Cartter prefers to Dunlop's membership functions. Bargaining is analyzed through a study of the relationships between trade union preference functions and employer preference functions, with the typical case of bargaining taken as one with a gradually increasing demand for labor.

The strike threat is then introduced into the bargaining picture and each party's bargaining attitude is analyzed in terms of the ratio between the cost to X of disagreeing with Y and the cost to X of agreeing on Y's terms. A value of the ratio of less than one is unfavorable to settlement, while a value greater than one is favorable. A further development of the bargaining model is then undertaken on the basis of the work of J. Pen (this *Review*, March 1952).

Cartter then moves to the aggregative level with a discussion of Keynesian and post-Keynesian problems. In this connection Cartter's discussion of the behavior of money wages is impaired by the fact that he does not indicate the source of the data used in the scatter diagram on page 147, so that the reader cannot evaluate the argument on his terms.

The penultimate chapter is largely concerned with macroeconomic (savings-investment) analysis of the effects of changes in labor's share of the national income. Cartter's pedagogic aims are not clear in this chapter and it impressed me as the least well-done in the book.

In the final chapter Cartter makes a plea for an "informed theoretic empiricism" in the study of the economics of labor. This is unassailable advice of which one may hope Cartter will partake liberally in the future. This re-

viewer also believes that a discussion of the secular inflation problem and its possible relation to wages would have increased the usefulness of the book as a possible text.

FRANCIS S. DOODY

Boston University

The Public Stake in Union Power. Edited by PHILIP E. BRADLEY. Charlottesville: University of Virginia Press, 1959. Pp. x, 382.

This book consists of a series of lectures by sixteen economists, who are identified in the preface as "distinguished economists who collectively may best be described as theorists or generalists." The sixteen apparently were selected to exclude those referred to as "persons versed in the skills of labor arbitration or . . . persons who follow the adaptive approach and emphasize psychological and other techniques that are helpful when adjusting to difficult situations." From the standpoint of participation the book is reminiscent of *The Impact of the Union* (D. McC. Wright, ed., New York 1951), for five people have contributed to both volumes. It is also like the earlier book in the sense that it is in large part a tract for the times on the perils of collective bargaining. At various places in the book unions are condemned for contributing to inflation, for prolonging depression, for standing in the way of progress, for denying efficiency and freedom. Several of the authors represent unions to be the most privileged and pampered of voluntary associations in the American economy.

The general theme of the book would seem to be that the public has an interest in limiting the power of unions. That this is not a novel theme is suggested by D. M. Wright's comment that "Practically everybody now agrees that unions should regulate in some way or other for some purpose or other (p. 111). (One wonders why he uses the word "now.") He then goes on, "But where trouble starts is in wondering how and for what purpose the union should be regulated." If "regulation" is an ambiguous word, it would appear that "power" is even more slippery. As the reader goes from one lecture to another in the book, he finds that each author has a different facet of power in mind.

It is possible to classify the lectures in terms of the type of power selected for consideration. One group, which is centered on the wage-push inflation problem, includes the papers of F. A. Hayek, Gottfried Haberler, William Fellner, and J. R. Meyer. E. H. Chamberlin deals with this as one of several issues. These several authors look with varying degrees of alarm at the power of unions to raise the general money-wage level and thereby to cause unemployment or inflation or both. They are all agreed that this is a problem, although Fellner feels ". . . moderately optimistic with respect to the degree of employment which would prove compatible in the long run with the insignificance of inflationary tendencies" (p. 254), and Meyer finds that ". . . the general effect of a wage increase would perhaps be desirable in times of a cost push inflation when investment capacity is fully utilized and consumer goods capacity is underutilized" (pp. 280-81).

A second group deals with the power of unions to interfere with or distort

the workings of the competitive market. Thus J. M. Clark reviews in a rather detached and whimsical manner all that is known and not known about wage determination in collective bargaining. F. H. Knight restates the liberal opposition to "political" interference in the free market. Wright cries out against unions as a restraining influence on the vital and progressive elements in competitive capitalism. The most intriguing paper in this group, one which throws off sparks in several directions, is the one by H. Gregg Lewis, "Competitive and Monopoly Unionism." This lecture, which is a working paper antecedent to further empirical research, seeks to develop a series of tests for measurement of the relative wage effects of unions' monopoly power. G. S. Becker pursues one of the implications of the Lewis paper, namely, that union power to affect relative wages will be indicated by price (initiation fees and dues) and nonprice techniques to ration entry to the union. Albert Rees confines his attention to two practices compatible with "competitive unionism," grievance settlement and seniority rules. G. W. Nutter inquires into the factors that determine the limits of union power. Bradley deals rather querulously with the question of how compulsory union membership comes into being. He concludes that neither Congress nor the executive branch of government, nor management, nor the courts have defended individual freedom from compulsory unionism. In the opinion of this reviewer the best single paper in the collection is the one by J. W. McKie, who goes directly to the issue of "Collective Bargaining and the Maintenance of Competition," illustrating the problems by specific cases and dealing in a realistic manner with the difficulties of finding practicable remedies.

Two of the lecturers do not talk about union power at all. P. T. Bauer lashes away at government regulation of wages in underdeveloped countries, urging that the cost of such regulation falls primarily on those excluded from the regulated activities. A. A. Alchian appraises the economic organization of higher education and finds it lacking. He looks first at faculty tenure rules which he considers neither necessary nor efficient, and then moves swiftly on to condemn the nonprofit, nonowned system which he identifies as the cause of tenure. His suggestion is that government subsidies be given to students rather than to schools, in the fashion of GI benefits. This would, he believes, "provide a chance for the private, profit-seeking school to provide us with a test of efficient education and truth seeking" (p. 369).

What does the whole book add up to? The book offers additional evidence that economists share a high regard for the competitive market and contumacy for some practices of some unions. However, it also shows a lack of agreement about how much and what kinds of power unions do in fact have and what limiting factors are presently operating. It is notable that when the discussion is about inflation the references are generally to industrial unions and when it is about "distortion" the examples are usually craft unions. Further lack of agreement appears in the area of policy recommendations even though only a few make any specific proposals for change. Some write from too lofty a perch to deal with such earthy particulars. This Wright says, "... so far as mere legal gadgets are concerned, there are plenty of measures available, and what is really lacking is not legal machinery but public opinion and public

understanding" (p. 122). Haberler and Fellner would rely principally on the reasonableness of unions; others stress prohibition of industry-wide bargaining, application of antitrust laws, and limits to union security agreements, picketing and secondary boycotts.

While the book does include varied treatments of a range of topics, the reader is given a decidedly one-sided interpretation of the issues. There is little sympathetic interpretation of unions' purposes (the Rees and McKie papers are exceptions) and nothing in the way of a staunch defense of them. It would have made more interesting reading to have the defendant in the dock, so to speak. One wonders if the students at Virginia needed to be inoculated against the virus of pro-unionism; is this like inviting a series of temperance lecturers to a Methodist church group?

The lack of "balance" or synthesis and the unevenness in the level of discourse and analysis will doubtless limit the book to use in specialized courses and to the researcher's reference shelf. However, this is an important use, and the University of Virginia, by publication of the lectures, has contributed to the evolution of national labor policy.

ROBERT J. LAMPMAN

University of Wisconsin

The Wage Rate Under Collective Bargaining. By J. PEN. Translated by T. S. PRESTON. Cambridge: Harvard University Press, 1959. Pp. xiv, 216. \$6.00.

This book could properly be subtitled "In Search of a Tautology." Pen tries to develop an equation system which must necessarily determine the wage rate resulting from collective bargaining. By definition unions agree to a wage settlement when the determining agent prefers to agree. If the union negotiator settles for a wage less than the wage that he regards as optimum, he does so because of the risk of conflict with the employer.

According to Pen's first model, the union negotiator will accept a wage from the employer when the additional benefits (as felt by the negotiator) of pushing to the optimum wage just equals the cost (as felt by the negotiator) of a conflict with the employer if the union insists on the optimum wage, when both are multiplied by the union negotiator's estimate of the probability of their occurrence— $(1 - r)$ and r respectively.

But this is not quite tautological enough for Pen, since it implies that the union negotiator is concerned with maximizing the expected value of his utility. Calling s the subjective weight given to r by the union leader, Pen substitutes s for r in producing his final equation of the equilibrium wage for the union.

A similar equation can be developed for the preferences of the employer negotiator. What we have, then, is an overdetermined system: two equations determining one unknown, w . The purpose of bargaining is so to change the functions in the two equations that they both yield the same w .

Pen does not quite achieve his tautology. That the optimum wage rather than w is on the margin of being worth the union negotiator's risk does not imply that w is the best wage for the negotiator to try to get. Some inter-

vening wage might be his best bet. To be valid, Pen's equations have to be rewritten in marginal terms. They then become special cases of utility maximization when marginal cost equals marginal revenue. Also Pen assumes that conflict utilities are independent of w , which is quite obviously not the case.

But these are rather minor revisions to produce Pen's goal of the collective bargaining tautology. The big question is: Once we've traveled to this destination (through some extremely muddy and unnecessary pages, I might add) how far have we gotten? Tautologies can be extremely useful, but they can also be nothing more than monuments to man's capacity to waste paper.

It is hard to say now how useful Pen's tautology will be. Certainly nothing Pen does with it demonstrates its worth. Rather he seems content to make his "theory" a rack on which to hang his casual observations of the bargaining process. Seeing a union negotiator bluffing a strike, he can say: "Ah, ha, that man is trying to increase the employer's estimate of the probability of conflict." Is this an intellectual advance?

Pen predicts (not from his "theory," which predicts nothing) that econometricians will be unhappy with his tautology. I think he is right. None of the terms in his equations refer to observable magnitudes. Nor do I see any rationale for assuming any particular behavior to these terms, and hence developing a theory that says something new about the way in which the world behaves.

On the way to his tautologies Pen criticizes Hicks and Zeuthen for their bargaining theories on the grounds that they are not tautological. But this is precisely the reason they yield testable implications. Hicks, for example, predicts that strikes are results of mistakes. Hence anything which would decrease mistakes, like length of the previous relationship of employer and union, should decrease strikes. Obviously this need not be the case. Isn't that refreshing!

This negative report is made in spite of Pen's imaginative, and sometimes insightful, display. The failure of this book is not so much Pen's, as that of an intellectual tradition.

PHILLIP NELSON

Columbia University

Probleme der Lohnstruktur: die wirtschaftliche und soziale Bedeutung der Lohnunterschiede. By FRIEDRICH FÜRSTENBERG. Tübingen: J. C. B. Mohr (Paul Siebeck), 1958. Pp. vi, 116. DM 9.80.

After a considerable interval, German economists have recently turned their attention again to labor economics. Erich Arndt's presentation of wage theory—reviewed in this *Review*, March 1958—has been followed by the present smaller monograph. This is, on the whole, an excellent summary of the present status of our knowledge about wage structures, their functions and—to a lesser extent—their changes. The work is mainly based upon American and British sources. In the six-page bibliography at the end of the book, more than half of the references are to Anglo-American literature. Unfortunately, the author does not seem to have closely followed the discussions of

union influence on relative wages. This, however, is the only major gap in the bibliography and in the body of the book that I have been able to detect.

The outline of the book is rather simple. The first chapter defines terms and lists seven types of wage differentials, including differences between time and piece wages. This is followed by chapters on the economic and social functions of the wage differentials, on changes in the wage structure, on problems in making the wage structure rational, and conclusions. On the whole, the author seems to share the basic position of Lloyd Reynolds, Richard Lester and others on the virtues and shortcomings of conventional labor-market theory, and places more emphasis on institutional factors than on the market as such.

Since the author's original contributions are somewhat limited in scope, I shall restrict myself to a few points on which significant disagreement exists. Fürstenberg seems to read more into the concept of the productivity of labor than can rightly be claimed for it. He identifies it, apparently, with that portion of the change in output that can be imputed to labor rather than investments, inventions or improved organizations (p. 9). At the same time, this concept of labor productivity is examined for its use as a yardstick for the appropriateness of income distribution (p. 11), and is found wanting. Needless to say, the concept has no more than a definitional meaning among social scientists and no necessary implications follow from it regarding changes in wage levels. The statistical evidence on which the author's contentions are based is singularly unconvincing: short-run comparisons are meaningless.

Wage differentials, the author finds, have little bearing upon the allocation of manpower. The evidence in support of this view is quite modest and would deserve more critical examination than the author has given it. Essentially, it seems to indicate that wage differentials are not always a necessary, nor a sufficient reason for job changes. That, however, means simply that job changes are a function of many variables, and few will dispute that wage differentials are one of these variables.

While the book will serve very well as an introduction to some aspects of wage theory for German-language students, its main interest for Americans will be the light it throws upon characteristically German problems. There is the difference between contract wage rates and effective wage rates. This is not the same problem as the "wage drift" Swedish style, but a regular part of the German collective bargaining system. Contract rates are merely minimum rates, comparable to our minimum wage under the Fair Labor Standards Act. Data on contract rates are, therefore, only indicative of effective rates, with the added difficulty that the relations between the two are likely to undergo appreciable changes from time to time, especially over the business cycle. Some wage statistics refer to contract rates, a few to effective rates, but on the whole there is a surprising lack of German wage data in the study—a good deal of the supporting evidence is taken from U.S. statistics. German wage statistics have not yet recovered from the ravages of the war.

The author presents some interesting data on the changes which improved education has produced in the possibilities of promotion for German workers.

Educational levels of skilled workers now "often surpass those of office employees"; they sometimes have academic high school degrees, and at least "in principle" workers may now even become engineers. The wall separating manual and nonmanual labor is gradually being removed.

Finally, this reviewer notes with a good deal of satisfaction the outspoken stand of the author against the idea—advanced in various ways in Germany—that there are objective standards which would permit a body of experts to set "correct" wage relationships. Indeed, the confrontation of some of the conflicting principles that can be used in determining relative wages is one of the best parts of this book, even though I would have wished for a more systematic analysis.

Altogether, it is a very useful book which might well serve as the starting point for future research. This is indeed precisely what the author intended his book to be.

ADOLF STURMTHAL

Roosevelt University

The Practice of Collective Bargaining. By EDWIN F. BEAL and EDWARD D. WICKERSHAM. Homewood, Ill.: Richard D. Irwin, 1959. Pp. xvii, 738. \$7.50

This book is true to its title for it emphasizes practice rather than theory. It probably will be of most interest to teachers and students technique courses and of little, if any, interest to professional labor economists. Economic aspects of collective bargaining are either missing or crudely treated. Such subjects as full employment, inflation, key wage settlements, and the wage-price spiral, are not even mentioned in the index. A short "digression" on wage theory is aptly titled. It does not succeed in its aim "... to make a modest contribution to the methods of theoretical analysis of wage determination ..." (p. 155). The alleged contribution stems from two postulates: "Craft-union wage bargaining is for a *standard and uniform* union rate ..." "Industrial-union wage bargaining ... is for a *structure of unequal rates* ..." (p. 155).

The central theme of the book may be summarized as follows: Collective bargaining can be explained and analyzed in terms of practice in two "model" situations, (a) craft unionism, and (b) industrial unionism. Part I of the book attempts to set the stage, with an historical review of collective bargaining in the United States, and descriptions of unions, employers and the role of government. The next four chapters deal with special types of union situations, in (1) craft industries, (2) factories, (3) extractive, distributive and service industries, and (4) white-collar situations. Part I closes with four chapters on: (a) areas of agreement and disagreement, (b) negotiation, (c) strike strategy and tactics, and (d) the nature of the labor agreement. The mission of Part I is apparently to make the case that craft and industrial unions are different and to argue that this explains differences in collective bargaining practice.

Part II is titled "Issues in Collective Bargaining," and includes conventional

subjects such as union and management security, wage structures and adjustments, hours and working conditions, pension and welfare plans, employment security, and technological change. It closes with a chapter on contract administration, a curious subheading under "issues in collective bargaining," and to this reviewer at least, giving too little emphasis to this subject.

Part III consists of 17 arbitration cases for student analysis. The book has an author and a subject index. The latter is weak.

Each chapter lists several "topics for investigation" presumably for students although these must be students of heroic stature. Thus, for example, one exercise consists of preparing and conducting an attitude survey of white-collar workers. Another consists of writing the history of a local industrial union. Selected annotated bibliographies of varying quality are given at the end of each chapter. There is no reference to wage theory in the bibliography on that chapter; the chapter including union critique of time study does not refer to Gomberg's basic work; the basic book by Turnbull, Williams and Cheit is not mentioned in connection with economic security, nor is Murray Latimer referenced in connection with GAW. In general, the numerous exhibits scattered through the text are helpful and of good quality.

The limited analysis provided by this book is based too frequently upon pontifical assertions and stereotyped descriptions. For example, "Wages are not and have never been the central issue for the factory employee" (p. 173); "The management man is likely to be a believer in . . . rugged individualism" (p. 244). It is suggested that the different approaches of unions and management reflect differences in "mentality" (p. 244).

Several topics are discussed inadequately, including economic versus unfair labor practice strikes; prevention of disputes; grievances, mediation and fact-finding; employment stabilization; arguments pro and con for industry-wide bargaining; and union security. Public policy aspects of collective bargaining typically are not discussions of social issues but rather emphasize impacts upon collective bargaining practices. Although the preface promises a discussion of the problem of labor racketeering, this section of the book is puny. The sections on union and employer policy could be strengthened. Addition of the concepts of agency-management, and unions as quasipublic institutions, would be helpful.

In summary, this book is descriptive rather than analytical, and chock-full of oversimplified generalities. It is organized around the premise that there are demonstrable differences between craft and industrial unions, and that these differences are important to the understanding, and the practice, of collective bargaining. The book is frankly oriented toward the pragmatic or practical reader. It provides some good descriptions of institutions and processes. It appears to be aimed at the elementary student in the technical course and night school students, rather than the would-be professional or professional labor economist, or industrial relations specialist. This volume will appeal most to those whose courses emphasize practice and the "practical" aspects of collective bargaining.

HERBERT G. HENEMAN, JR.

University of Minnesota

Labor Economics and Industrial Relations. By DALE YODER and HERBERT G. HENEMAN, Jr. Cincinnati: South-Western Publishing Co., 1959. Pp. x, 726. \$6.75.

The usual question posed to the author (or prospective author) of a new text is "How does it differ from other works in the field?" The distinguishing characteristic of the book at hand is its emphasis on manpower management, the application of human resources in ways which develop and use their greatest skills and potentialities. Both authors, but particularly Professor Yoder, have published more advanced volumes on manpower management, so that the emphasis in this introductory text on that subject comes as no surprise. The book, therefore, does not focus the student's attention on unions and collective bargaining to the extent that most basic labor texts do.

The organization of the material begins conventionally enough with an introductory chapter followed by a discussion of the labor force. Part II deals with the institutional setting "in which human resources are allocated, used, and conserved." The institutions discussed are the labor market, unions, employers, and the government. The remainder of the book, with the exception of a summary section, is divided into four types of current labor problems: industrial unrest and conflict, employment, wages, and economic insecurity.

It is particularly in the chapters dealing with employment problems that the emphasis on manpower management is evident. The chapters on wage problems include one on historical wages, another on marginal productivity and bargaining wage theories, and a third on full-employment wage theory. The last mentioned chapter turns out to be primarily a discussion of national income determination, in which Keynes' views on wages and employment are dealt with too briefly and without sufficient clarity. This latter problem is not helped by an apparent error on page 519 in the following statement (*italics added*):

... Keynes notes that public policy may choose between the alternatives of a fixed price level and higher wages or a *rising* price level and stable wages.

The footnote reference is to pages 270-71 of *The General Theory*, where Keynes speaks of a *falling* price level and stable wages.

In the preface, the authors speak of two goals the text seeks to accomplish: to serve (1) as a general introduction to the broad field of modern industrial relations, and (2) as a background in citizenship training for those who take no additional courses in the field. In the opinion of the reviewer, the book is more suitable for the first objective than for the second.

The authors use a great amount of descriptive material, and they present it reasonably well. In any field of applied economics a certain minimum of such information is essential. For prospective practitioners of industrial relations, detailed descriptive material and frequent use of examples may be both necessary and worth while. However, for citizenship training, excessive information of this type may interfere with presentation of the analytical framework, which, it is hoped, will help the reader gain some insight into both current and future labor problems.

Another aspect of the book which tends to interfere with a clear development of the analysis of labor problems is the authors' apparent assumption that the student has had no previous work in economics. As a result considerable space is devoted to detailed explanations of the most elementary concepts of economics. Often this results in diverting the flow of thought from the discussion of the labor problem under study. Even in schools of business, most students are expected to take economic principles, usually before taking courses in industrial relations or labor problems. It would seem reasonable for the author of a text on labor economics and industrial relations to assume that the student has had some introduction to economics. On that assumption, preliminary exposition for the analysis of particular labor problems can be handled more expeditiously than is done in this text.

This volume is likely to be of most interest to schools of business or institutions specializing in industrial relations, since it does a good job of tying in manpower management with labor economics.

ROBERT R. FRANCE

University of Rochester

Population; Welfare Programs; Standards of Living

Population and Progress in the Far East. By WARREN S. THOMPSON. Chicago: University of Chicago Press, 1959. Pp. ix, 443. \$7.50.

Once again Warren S. Thompson has given us a broad survey of the "population problem" of Asia. As in his earlier books, *Danger Spots in World Population* (1929) and *Population and Peace in the Pacific* (1946), he is concerned with the threat of population growth to economic progress and world peace. The body of the work is a series of chapters assessing population, agriculture and industrialization in Japan, India, China, Pakistan, Ceylon, Southeast Asia, Taiwan and Korea. They form the basis in turn for a gloomy forecast of Asia's prospects for raising living standards during the next generation, and a prediction that political tensions will rise as aspirations remain unfulfilled.

The volume can be recommended especially to college students and other nonspecialists seeking to orient themselves broadly in the demographic and economic affairs of Asia. The most authoritative sections are those reviewing trends in fertility, mortality and natural increase. Country by country the Malthusian realities of the scene are laid bare: birth rates lingering at 40-45; death rates dropping to 25 and below. Asia's population generally (excepting that of Japan) is expected to grow at a rate of 1.5 per cent or more for at least another generation.

Despite this prospect, says the author, few Asian leaders are yet committed to any determined, massive effort to bring birth rates under control. He may be a little less than just to the Indians in this regard. On the other hand, Peiping is credited with more purpose here than recent reports bear out. He himself refrains from any specific proposals as to how to overcome the formidable cultural and economic barriers to widespread family limitation. This is regrettable in view of his long study of the problem.

The economic analysis that accompanies these population projections is necessarily less rigorous and conclusive. Thompson interweaves fact and argument to support his view that development programs of the magnitude now prevailing in most Asian countries are unlikely to raise living standards substantially in the near future. This may well be true. At a number of points, however, his generalizations seem too sweeping, and sometimes unnecessarily pessimistic. For example, he cites "the strong movement toward autarchy" (p. 398) as foreclosing any significant relief of population pressure from international trade in food, machinery or other essentials. This leads him virtually to write off Japan's economic future, despite her remarkable comeback since the war. As for Communist China, his skepticism may be warranted. But the truth is that we still lack the data to assess her record since 1949, still more to predict her future. The author's chapters on China are less persuasive than those on India and the rest of southern Asia. He has some telling criticisms of India's complacency over her agricultural problem.

Mounting political tensions throughout Asia are bound to grow out of economic frustration, the author feels. In particular, he fears that disappointment among Asian peoples over their continuing poverty will arouse resentment over their relative disadvantage in land and other resources per capita. It is suggested that Japan may thus be led to try to seize New Guinea; China may move south into the unused lands of the Indo-chinese peninsula; India may cast covetous eyes on Burma or Madagascar.

Such suspicions seem gratuitous at the present juncture. In any event they are supported here with little historical or theoretical analysis. Even the case of Japan, so often cited, hardly bears out the "have not" theory of aggression. Had Japan possessed more rice land, or oil and iron a generation ago, would her militarists have been less inclined to territorial conquest, or her people less readily led and coerced down the road to war? It is easier to believe that more resources at home would have enabled Japan to conquer her neighbors more handily. So it may be with Mao's China today. Thompson himself remarks that the Peiping regime is ridden with an ideology that is tense and aggressive, regardless of the resources at its command. Significantly, the greatest international seizures of wealth and income since the second world war have been the depredations of the Soviet Union in Eastern Europe, through conquest, reparations and other levies, despite the great Russian frontier to the east.

This is not to say that economic pressures may not contribute to political tension and disorder. Nor is it to dismiss international inequality in wealth and income as of no concern to world peace. On the contrary, it poses one of the great dilemmas in building a stable world society based on liberal principles. Thompson is essentially saying in this book that it will become still more intractable if unrestrained breeding among non-Western peoples widens further the disparities that already exist. On this no one can disagree.

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Health Insurance. By O. D. DICKERSON. Homewood, Ill.: Richard D. Irwin, 1959. Pp. xvi, 500. \$6.00.

This book is intended to serve as a text in college courses and in training programs sponsored by insurance organizations. Its 19 chapters discuss, first, the general problem of ill health and the types of insurance developed to meet this risk, then the expense and income coverages presently available and, finally, the intricate operations of health insurers. Industry "codes," uniform policy provisions, etc. are included in appendices. Although the facts are well organized and clearly presented and the bibliography is reasonably complete, the treatment of certain crucial "problems and issues" is less than satisfactory.

Old-age, survivors and disability insurance is fully described, for example, and the author acknowledges that social insurance is indeed insurance, a viewpoint not shared throughout the industry nor even the Ways and Means Committee. The "disability rider" available through the Veterans Administration is, however, overlooked. The author laments the paucity of morbidity data (p. 359 *et seq.*) but is apparently unaware of the National Health Survey, a nation-wide monthly sampling survey begun in 1957 by the Public Health Service that is complementary and analogous to the well-known Current Population Survey of the Bureau of Census. And, despite their manifest relevance, the book's index lists neither "collective bargaining," "fringe benefit" nor "labor union." The omissions are the author's, not the indexer's.

More significant matters are also handled cavalierly or superficially. With respect to health insurance after age 65, the author merely concludes that "adequate coverage will presumably have to wait for development of policies which provide for funding the benefit costs throughout the insured's working life" (p. 333). Not from this text will the student learn that extension of old-age, survivors and disability insurance to provide retirees with hospital and surgical insurance benefits is currently the most controversial question in this field. Even more serious is the scanty discussion of overutilization (pp. 136-41, 187-90). The author ignores the substantial evidence that prepayment of physicians' services for outpatient diagnosis and early treatment tends to reduce the incidence of hospitalization. This has been the experience of the consumer-sponsored plans (so summarily dismissed on p. 188) that offer the best alternative to further government intervention into the market for health insurance.

Dickerson's work is welcome, but it should be considered only a first approximation of a thorough college-level text on the subject of health insurance. Future efforts should emphasize the disparity between the demand perceived by demographers and the supply offered by health insurers. Morbidity data indicate increasing long-term illness and the advantage of preventive services; as yet, most policies cover only short-term illness and emergency treatment. There may still be time for private, voluntary health insurance to redress the balance, but the hour grows late.

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TITLES OF NEW BOOKS

General Economics; Methodology

- MYRDAL, G. Value in social theory—a selection of essays on methodology. Edited by P. Streeten. New York: Harper, 1959. Pp. xlvii, 269. \$5.
- ROBERTSON, D. Lectures on economic principles. Vol. 3. London: Staples, 1959. Pp. 164. 16s.
- ROSTOW, E. V. Planning for freedom. The public law of American capitalism. New Haven: Yale Univ. Press, 1959. Pp. x, 437. \$6.
- SAMETZ, A. W., HART, A. G. AND HOMAN, P. T. Instructor's manual for *The Economic Order*. New York: Harcourt, Brace, 1959. Pp. x, 134.
- Economics and the policy maker. Brookings lectures, 1958-1959. Washington: Brookings Inst., 1959. Pp. xi, 209. \$2.95.

Price and Allocation Theory; Income and Employment Theory; Related Empirical Studies; History of Economic Thought

- DE BODT, J. P. Critique économique du prix de revient industriel—avec illustration concrète de l'utilisation de la méthode de la comptabilité marginale. Louvain: Nauwelaerts, 1959. Pp. xiii, 178.
- FRIEDMAN, M. The demand for money: some theoretical and empirical results. Occas. paper 68. New York: Nat. Bur. Econ. Research, 1959. Pp. 25. 75¢.
- THONSTAD, T. Produksjonsstruktur, import og sysselsetting. (Structure of production, imports and employment—an input-output study.) With English summary. Samfunnsøkonomiske stud., no. 8. Oslo: Central Bur. Stat. Norway, 1959. Pp. 129. 5.50 kr.

Economic History; Economic Development; National Economies

- BAUER, P. T. United States aid and Indian economic development. Washington: Am. Enterprise Assoc., 1959. Pp. vi, 119. \$1.
- BENNETT, H. F. Precision power—the first half century of Bodine Electric Company. New York: Appleton-Century-Crofts, 1959. Pp. xiv, 336. \$6.
- CARROTHERS, G. A. P. Papers and proceedings of the Regional Science Association, Vol. 4, 1959. Philadelphia: Reg. Sci. Assoc., Wharton Sch. Fin. Commerce, Univ. Pennsylvania, 1959. Pp. 334.
- CHANDRASEKHAR, S. China's population—census and vital statistics. New York: Oxford Univ. Press; Hong Kong: Hong Kong Univ. Press, 1959. Pp. 69. \$1.20.
- CHARDONNET, J. Métropoles économiques—Londres, Amsterdam, Anvers, Liège, Frankfurt, Mannheim, Nuremberg, Linz, Barcelone, Gênes, Naples, New York. Cahiers Fond. Nat. Sci. Pol., 102. Paris: A. Colin, 1959. Pp. 269.
- CIPOLLA, C. M., ed. Storia dell'economia italiana—saggi di storia economica. Vol. 1: Secoli settimo-diciassettesimo. Turin: Ed. Sci. Einaudi, 1959. Pp. xii, 615. L. 4.000.
- DAVIN, L. E. Conditions de croissance des économies régionales en état de suremploi—le cas de Liège. Delmer, A., Le destin Européen de la Meuse. Cahier (L-5) no. 90. Paris: I.S.E.A., 1959. Pp. 38.
- EPSTEIN, F. T. East Germany; a selected bibliography. Washington: Slavic and Central European Div., Lib. Cong., 1959. Pp. 55.

- GOVAN, T. P. Nicholas Biddle—nationalist and public banker, 1786-1844. Chicago: Univ. Chicago Press, 1959. Pp. xii, 429. \$7.50.
- KUZNETS, S. Six lectures on economic growth. Glencoe, Ill.: Free Press, 1959. Pp. 122. \$3.50.
- Presented at the Centro de Estudios Monetarios Latinoamericanos (CEMLA), Mexico City, July 1958. A Spanish edition *Aspectos Cuantitativos del Desarrollo Económico* was published by CEMLA in August 1959.
- LIGGETT, D. R., comp. Small industry development organizations—a world-wide directory. Internat. Indus. Development Center, Stanford Research Inst. Glencoe, Ill.: Free Press, 1959. Pp. x, 137. \$10.
- LINDSAY, F. A. The growth of Soviet economic power and its consequences for Canada and the United States. Washington: Nat. Planning Assoc., Private Planning Assoc. Canada, 1959. Pp. viii, 27. \$1.
- MATHIAS, P. The brewing industry in England, 1700-1830. London: Cambridge Univ. Press, 1959. Pp. xxvii, 596. 85s.
- MUKHERJEE, P. K. Economic surveys in underdeveloped countries—a study in methodology. Bombay: Asia Pub. House, 1959. Pp. xii, 263. 34s.
- NOVE, A. Communist economic strategy: Soviet growth and capabilities. Washington: Nat. Planning Assoc., 1959. Pp. xi, 82. \$2.25.
- SCLAFFERT, T. Cultures en Haute-Provence—Déboisements et pâturages au Moyen Age. Ecole Pratique des Hautes Études, Les hommes et la Terre, 4. Paris: SEVPEN, 1959. Pp. 267.
- SIMONET, H. La formation du capital dans les pays sous-développés et l'assistance financière étrangère. Brussels: Inst. de Sociologie Solvay, Univ. Lib. de Bruxelles, 1959. Pp. 222.
- THOMPSON, W. R. AND MATTILA, J. M. An economic model of postwar state industrial development. Detroit: Wayne State Univ. Press, 1959. Pp. vii, 116. \$3.
- VINSKI, I. Procjena nacionalnog bogatstva—po područjima Jugoslavije. Zagreb: Ekonomski Institut, Narodne Republike Hrvatske, 1959. Pp. 282.
- Annual report, 1958; presented to the Government and the Finance Committee of the Knesset in accordance with section 59 of the Bank of Israel Law 5714-1954. Jerusalem: Bank of Israel, 1959. Pp. xv, 305.
- The comparative study of economic growth and structure—suggestions on research objectives and organization. New York: Nat. Bur. Econ. Research, 1959. Pp. vii, 201. \$3.
- Comparisons of the United States and Soviet economies, Pts. 1, 2, & 3. Papers submitted by panelists appearing before the Subcommittee on Economic Statistics, Joint Economic Committee, 86th Cong., 1st sess. Washington: Supt. Docs., 1959. Pp. xii, 376; ix, 543; vii, 69. \$1; \$1; 25¢.
- Long-range projections for economic growth: the American economy in 1970. Nat. Planning Assoc. staff report, pamph. no. 107. Washington: Nat. Planning Assoc., 1959. Pp. viii, 96. \$2.
- Prerequisites for economic growth. Stud. bus. econ., no. 66. New York: Nat. Indus. Conference Board, 1959. Pp. 80. Assoc. price, \$2; others, \$10.
- Report of the panel of economists on the second five year plan, 1960-1965. Karachi: Gov. Pakistan Press, 1959. Pp. 28.
- Toward the economic development of the Republic of Viet-Nam. Report of the Economic Survey Mission to the Republic of Viet-Nam. UN pub. no. 59.II.H.1. New York: Columbia Univ. Press, 1959. Pp. 298. \$3.

Statistical Methods; Econometrics; Social Accounting

- BRV, G. The average workweek as an economic indicator. Occas. paper 69. New York: Nat. Bur. Econ. Research, 1959. Pp. ix, 115. \$2.

- EZEKIEL, M. AND FOX, K. A. *Methods of correlation and regression analysis—linear and curvilinear*. 3rd ed. New York: Wiley, 1959. Pp. xv, 548. \$10.95.
- HANNA, F. A. *State income differentials, 1919-1954*. Durham, N.C.: Duke Univ. Press, 1959. Pp. xix, 268. \$7.50.
- NETT, R. AND HETZLER, S. A. *An introduction to electronic data processing*. Glencoe, Ill.: Free Press, 1959. Pp. 287. \$6.75.
- VALAVANIS, S. *Econometrics—an introduction to maximum likelihood methods*. Edited by A. H. Conrad. New York: McGraw-Hill, 1959. Pp. xvii, 223. \$7.
- Business statistics 1959 biennial edition*. U. S. Office Bus. Econ. Washington: Supt. Docs., 1959. Pp. 351.
- Indian economics year book, 1959-1960*. Allahabad: Kitab Mahal, 1959. Pp. v, 266. Rs 3.
- National income accountants, 1957 and national wealth survey, 1955*. Econ. bull. no. 1, February 1959. Tokyo: Econ. Research Inst., Econ. Planning Agency, Japanese Govt., 1959. Pp. 72.
- A standardized system of national accounts*. 1958 ed. Organization for European Economic Cooperation. Paris: OEEC, 1959. Pp. 104.
- Wholesale prices and price indexes, 1958*. Bur. Lab. Stat., bull. no. 1257. Washington: Supt. Docs., 1959. Pp. 310.

Economic Systems; Planning and Reform; Cooperation

- BALASSA, B. A. *The Hungarian experience in economic planning—a theoretical and empirical study*. New Haven: Yale Univ. Press, 1959. Pp. vi, 283. \$6.
- KORNAI, J. *Overcentralization in economic administration. A critical analysis based on experience in Hungarian light industry*. Transl. by J. Knapp. New York: Oxford Univ. Press, 1959. Pp. xv, 236. \$5.20.
- MARCHEL, A. *Systèmes et structures économiques*. Paris: Press. Univ. France, 1959. Pp. 716. 2.200 fr.
- SALVADORI, M. *The economics of freedom—American capitalism today*. London: Pall Mall Press, 1959. Pp. xxii, 242. 30s.
- Ekonomicheskoe Sorevnovanie Mezhdru SSR i SShA. Kritika vzglyadov amerikanskikh burzhuaznykh ekonomistov*. (Economic competition between USSR and USA. Critique of the views of the American bourgeois economists.) Moscow: Gosplanizdat, 1959. Pp. 242.

Business Fluctuations

- MATTHEWS, R. C. O. *The business cycle*. Cambridge econ. handbook ser. Chicago: Univ. Chicago Press, 1959. Pp. xv, 300. \$3.
- SPRAKE, A. *Booms and slumps*. New York: Pageant Press, 1959. Pp. 88. \$2.50.
- THORP, W. L. AND QUANDT, R. E. *The new inflation*. New York: McGraw-Hill, 1959. Pp. xi, 233. \$5.
- Economic report of the President, transmitted to the Congress, Jan. 20, 1960*. Washington: Supt. Docs., 1960. Pp. 243.
- JOINT ECONOMIC COMMITTEE, 86th Cong., 1st sess. *Employment, growth and price levels*. Washington: Supt. Docs., 1959.
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DAY, A. C. L. The economics of money. London: Oxford Univ. Press, 1959. Pp. vii, 248. 7s. 6d.

GARVEY, G. Deposit velocity and its significance. New York: Federal Reserve Bank of New York, 1959. Pp. 88. 60¢.

KOLHATKAR, V. Y. Modern theory of money; a critical analysis. 2nd ed. Baroda, India: Good Companions, 1958. Pp. 242. Rs 9.-.

KRIZ, M. A. Gold in world monetary affairs today. Essays in internat. fin. no. 34. Princeton: Princeton Univ. Press, 1959. Pp. 32.

LINDBECK, A. The "new" theory of credit control in the United States. Stockholm econ. stud., pamph. ser. no. 1. Stockholm: Almqvist & Wiksell, 1959. Pp. 56. SKr 4.

LÜTHY, H. La banque protestante en France, de la révocation de l'Edit de Nantes à la révolution. Vol. 1, Dispersion et regroupement (1685-1730). École Pratique des Hautes Études, Affaires et gens d'affaires, no. 19. Paris: SEVPEN, 1959. Pp. 452.

MADDEN, C. H. The money side of "The Street." New York: Federal Reserve Bank of New York, 1959. Pp. 104. 70¢.

Le casse di risparmio nel mondo. Rome: Assoc. Casse di Risparmio Italiano, 1959. Pp. 328.

Savings and Loan holding companies. Hearings before Senate Committee on Banking and Currency, 86th Cong., 1st sess., Aug. 18 and 19, 1959. Washington: Supt. Docs., 1959. Pp. 106.

Public Finance; Fiscal Policy

BRAZER, H. E. City expenditures in the United States. Occas. paper no. 66. New York: Nat. Bur. Econ. Research, 1959. Pp. 82.

BRITTAİN, H. The British budgetary system. London: Allen & Unwin, 1959. Pp. 320. 25s.

NAGPAL, B. D. Illustrated income-tax law. Allahabad: Kitab Mahal, 1959. Pp. 380. Rs 7.50.

- Budgeting in public authorities. By a study group of the Royal Institute of Public Administration. New York: Macmillan, 1959. Pp. 299. \$6.50.
- Depreciation and taxes. Symposium conducted by the Tax Institute, November 20 and 21, 1958. Princeton: Tax Inst., 1959. Pp. viii, 248. \$6.
- Informe sobre la revision de la contabilidad del gobierno federal. By Comision de Revision Contable. Mexico, DF: Sec. Hacienda y Credito Publico, 1958. Pp. 115.
- Investigation of the financial condition of the United States. Analysis of hearings by J. W. Ford, S. E. Harris and W. F. Bennet, before Senate Committee on Finance, 85th Cong. Washington: Supt. Docs., 1959. Pp. 148.
- Midyear review—1960 federal budget. U. S. Bur. Budget. Washington: Supt. Docs., 1959. Pp. 44.
- Tax revision compendium. Compendium of papers on broadening the tax base submitted to the House Committee on Ways and Means, beginning November 1959. Washington: Supt. Docs., 1959. Pp. 2382.

International Economics

- BARR, R. J., ed. American trade with Asia and the Far East. Marquette Asian stud. no. 1. Milwaukee: Marquette Univ. Press, 1959. Pp. xix, 317. \$9.
- D'ALAURO, O. Il mercato comune Europeo; ed altri saggi di politica economica. Genoa: Lib. Bozzi, 1959. Pp. 167.
- ERB, G. AND ROGGE, P. Preispolitik im teilintegrierten Markt. Tuebingen: J. C. B. Mohr (Paul Siebeck), 1958. Pp. xii, 228. DM 17; paper, DM 13.50.
- JHA, S. C. Marxist theories of imperialism: Lenin, Rosa Luxemburg and Fritz Sternberg. Calcutta: Bookland Private, 1959. Pp. 79. Rs 3.
- KÜNG, E. Zahlungsbilanzpolitik. Zurich: Poligraphischer; Tuebingen: J. C. B. Mohr (Paul Siebeck), 1959. Pp. xix, 891. DM 54; Paper, DM 48.
- LAMARTINE YATES, P. Forty years of foreign trade—a statistical handbook with special reference to primary products and under-developed countries. London: Allen & Unwin, 1959. Pp. 255. 40s.
- SANZ, R. V. AND FLOREZ, L. B. La construcción naval española y la integración económica europea. Madrid: Soc. Española de Construcción Naval, 1959. Pp. 194.
- SAPIR, M. Japan, China, and the West. Washington: Nat. Planning Assoc., 1959. Pp. 79.
- Cotton textile subsidy. Hearing before the Subcommittee on Cotton of the House Committee on Agriculture, August 11, 1959. Washington: Supt. Docs., 1959. Pp. 62.
- The European economic community. A case study of the new economic regionalism. Pt. 1. Stud. in bus. and econ., Vol. 13, no. 2, September 1959. College Park: Bur. Bus. and Econ. Research, Univ. of Maryland, 1959. Pp. 16.
- European organisations, 1959. New York: Oxford Univ. Press; London: PEP and Allen & Unwin, 1959. Pp. xvi, 372. \$5.40.
- This is the report of a research group with international membership. The organizations included in the study are: The Economic Commission for Europe, The Organization for European Economic Co-operation, The Council of Europe, The North Atlantic Treaty Organization, Western European Union, The European Coal and Steel Community, The European Economic Community, The European Atomic Energy Community.
- Foreign private enterprise in Italy. Vol. 1: The Italian law on foreign capital investments. 2nd. Ed. Rome: Banco di Roma, 1959. Pp. 126.
- Mutual security appropriations for 1960 (and related agencies). Hearings before Senate Committee on Appropriations, 86th Cong., 1st sess. Washington: Supt. Docs., 1959. Pp. 946.
- Réglementation des paiements avec l'étranger—Suisse. 1948 ed., suppl. no. 12. Basle: Bank Internat. Settlements, 1959. Pp. 32.

- Report of the Committee of Enquiry into the Financial Structure of the Colonial Development Corporation. Cmd. 786. London: H. M. Stat. Off., 1959. Pp. 25.
- Soviet economic penetration in the Middle East. Special study prepared by H. L. Hoskins, Legis. Ref. Svce., Lib. Cong., September 1959. Washington: Supt. Docs., 1959. Pp. 19.
- Staff memorandum on international lending agencies. House Committee on Foreign Affairs, 86th Cong., 1st sess., Feb. 16, 1959. Washington: Supt. Docs., 1959. Pp. 143.
- Towards a solution of our wheat surplus problems. A statement by the Canadian-American Committee. Washington: Nat. Planning Assoc., Private Planning Assoc. Canada, 1959. Pp. vi, 13. 30¢.
- The United States economy and the Mutual Security Program; a report pursuant to section 413(c) of the Mutual Security Act of 1954, as amended. Washington: Dept. of State, 1959. Pp. 130.
- United States foreign policy. Study paper no. 1: Worldwide and domestic economic problems and their impact on the foreign policy of the U.S., by Corp. Econ. & Indus. Research. Study paper no. 2: Possible nonmilitary scientific developments and their potential impact on foreign policy problems of the U.S., by Stanford Research Inst., prepared for Senate Committee on Foreign Relations, 86th Cong., 1st sess. Washington: Supt. Docs., 1959.
- U.S. private foreign investment. Hearings before a subcommittee of the Senate Committee on Banking and Currency, 86th Cong., 1st sess., July 13-15, 1959. Washington: Supt. Docs., 1959. Pp. 171.
- Yearbook of the United Nations, 1958. UN pub. sales no.: 59.I.1. New York: Columbia Univ. Press, 1959. Pp. x, 610. \$12.50.

Business Finance; Investment and Security Markets; Insurance

- BAJPAI, O. P. Elements of life insurance. Alahabad: Kitab Mahal, 1959. Pp. 195. Rs 5.
- BERNHARD, A. The evaluation of common stocks. New York: Simon and Schuster, 1959. Pp. x, 182. \$3.95.
- HUNT, P., WILLIAMS, C. M. AND OTHERS. Case problems in finance. 3rd ed. Homewood, Ill.: Irwin, 1959. Pp. ix, 694. \$7.50.
- MASSE, P. Le choix des investissements. Critères et méthodes. Paris: Dunod, 1959. Pp. vi, 489. 4.900 fr.
- RIEDEL, R. AND MILLER, J. S. Insurance principles and practices. 4th Ed. Englewood Cliffs: Prentice-Hall, 1959. Pp. xvi, 876. \$7.95.
- SOLOMON, E., ed. The management of corporate capital. Grad. Sch. Bus., Univ. Chicago, ser. 3. Glencoe, Ill.: Free Press, 1959. Pp. 327. \$7.50.
- ULDALL-HANSEN, H. Tid og rente. (Time and interest.) A discussion of the relationship between the length of the amortization period and the effective yield of bonds. Summary in English. Copenhagen: Dansk Videnskabs, 1959. Pp. 247. Kr. 35.
- General rules and regulations under the Securities Act of 1933 as in effect August 1, 1959. Washington: Supt. Docs., 1959. Pp. 79.
- The poor man's guide to the stock exchange. London: Lab. Research Dept., 1959. Pp. 80, 6s.

Business Organization; Managerial Economics; Marketing; Accounting

- CHATURVEDI, J. N. Theory of marketing in underdeveloped countries. Allahabad: Kitab Mahal, 1959. Pp. 137. Rs 7.50.
- EASTERFIELD, T. E. Productivity measurement in Great Britain—a survey of recent work. London: Dept. Sci. & Indus. Research, 1959. Pp. 79.
- GOODMAN, L. L. Automation—today and tomorrow; a technical survey of current progress. With bibliog. of automatic factory. Fair Lawn, N.J.: Essential Books; London: Iota Services, 1959. Pp. vi, 158. \$7.20.

- HAIRE, M., ed. *Modern organization theory. A symposium of the Foundation for Research on Human Behavior*. New York: John Wiley, 1959. Pp. x, 324. \$7.75.
- HARRIS, R. AND SELDON, A. *Advertising in a free society*. London: Inst. of Econ. Affairs, 1959. Pp. xiii, 216. 18s.
- HONKO, J. *Yrityksen vuositulos. (The annual income of an enterprise and its determination.) A study from the standpoint of accounting and economics. Summary in English.* Helsinki: Liiketaloustieteellinen Tutkimuslaitos, 1959. Pp. 246.
- KOONTZ, H. AND O'DONNELL, C. *Readings in management*. New York: McGraw-Hill, 1959. Pp. ix, 523. \$6.50.
- KURNOW, E., GLASSER, G. J., AND OTTMAN, F. R. *Workbook to accompany Statistics for business decisions: problems and questions on statistica*. Homewood, Ill.: Irwin, 1959. Pp. v, 189. \$3.95.
- OTSUKI, M. *Theoretical investigation of general accounting and farm accounting*. English pub. no. 2. Kyoto: Research Inst. Farm Accounting, Kyoto Univ., 1958. Pp. 86.
- PIGORS, P., MYERS, C. A. AND MALM, F. T., ed. *Readings in personnel administration*. 2nd ed. New York: McGraw-Hill, 1959. Pp. xii, 554. \$6.50.
- QUINN, J. B. *Evaluating research and development—the segmental approach*. Tuck bull. no. 22. Hanover, N.H.: Amos Tuck Sch. Bus. Admin., Dartmouth College, 1959. Pp. 20.
- TIDWELL, S. B. *Public school fund accounting—principles and procedures*. New York: Harper, 1959. Pp. xiv, 298. \$7.50.
- WARNER, W. L. AND MARTIN, N. H. *Industrial man: businessmen and business organizations*. New York: Harper, 1959. Pp. xi, 580. \$6.50.
- WORTHY, J. C. *Big business and free men*. New York: Harper, 1959. Pp. xii, 205. \$4.
- Proceedings of National Symposium on Management Games*, University of Kansas, 1958. Lawrence: Center Research Bus., Univ. Kansas, 1958. 1 vol.
- Severance pay patterns in manufacturing*. Stud. person. pol., no. 174. New York: Nat. Indus. Conference Board, 1959. Pp. 47. \$12.50 for non-associates.

Industrial Organization; Government and Business; Industry Studies

- BOCK, B. *Concentration patterns in manufacturing. Some findings from an inquiry into the relevance of data being used to measure market shares in specified industries*. Stud. bus. econ. no. 65. New York: Nat. Indus. Conf. Board, 1959. Pp. 128. \$12.50.
- CAVERS, D. F. AND NELSON, J. R. *Electric power regulation in Latin America*. Baltimore: Johns Hopkins, for Internat. Bank Reconstr. Develop. and UN Econ. Comm. Latin America, 1959. Pp. xx, 279. \$6.
- DE CHAZEAU, M. G. AND KAHN, A. E. *Integration and competition in the petroleum industry*. Petrol. monogr. ser. vol. 3. New Haven: Yale Univ. Press, 1959. Pp. xviii, 598. \$7.50.
- EDWARDS, C. D. *The price discrimination law—a review of experience*. Washington: Brookings Inst., 1959. Pp. xxii, 698. \$10.
- FREDERICK, J. H. *Improving national transportation policy*. Washington: Am. Enterprise Assoc., 1959. Pp. 50. \$1.
- HAYNES, W. *Brimstone: the stone that burns. The story of the Frasch sulphur industry*. Princeton: Van Nostrand, 1959. Pp. xix, 308. \$5.95.
- JENKINS, G. *The Ministry of Transport and Civil Aviation*. London: Allen & Unwin; New York: Oxford Univ. Press, 1959. Pp. 231.
- KEEZER, D. M. AND OTHERS. *New forces in American business—an analysis of the economic outlook for the '60s*. New York: McGraw-Hill, 1959. Pp. xi, 278. \$4.75.
- KLOTEN, N. *Die Eisenbahntarife im Gueterverkehr—Versuch einer Theoretischen Grundleung*. Tuebingen: J. C. B. Mohr (Paul Siebeck), 1959. Pp. 224. DM 24.80.
- LEARNED, E. P. AND ELLSWORTH, C. C. *Gasoline pricing in Ohio*. Boston: Div. Research, Grad. Sch. Bus. Admin., Harvard Univ., 1959. Pp. xx, 258. \$9.

- MCKIE, J. W. Tin cans and tin plate—a study of competition in two related markets. Cambridge: Harvard Univ. Press, 1959. Pp. xii, 321. \$7.50.
- VERNEY, D. V. Public enterprise in Sweden. Liverpool: Liverpool Univ. Press, 1959. Pp. viii, 132. 21s.
- Administered prices. Hearings before the Subcommittee on Antitrust and Monopoly, 86th Cong., 1st sess., April-May 1959. Washington: Supt. Docs., 1959. Pp. 850.
- Designation of primary highway system. Hearings before a subcommittee of the Senate Committee on Public Works, 86th Cong., 1st sess., June 23, 1959. Washington: Supt. Docs., 1959. Pp. 43.
- Energy resources and technology. Hearings before the Subcommittee on Automation and Energy Resources, Joint Economic Committee, 86th Cong., 1st sess., Oct. 12-16, 1959. Washington: Supt. Docs., 1959. Pp. vi, 352. \$1.25.
- Equal pricing. Hearings before a subcommittee of the House Committee on Interstate and Foreign Commerce, 86th Cong., 1st sess., July 21 and 22, 1959. Washington: Supt. Docs., 1959. Pp. 117.
- Highway trust fund and federal aid highway financing program. Hearings before the House Committee on Ways and Means, 86th Cong., 1st sess., July 22-24, 1959. Washington: Supt. Docs., 1959. Pp. 483.
- Indexes to the International standard industrial classification of all economic activities. UN pub. no. 59.xvii.9. New York: Columbia Univ. Press, 1959. Pp. 359. \$3.50.
- Monopoly and technological problems in the scrap-steel industry. Report of the Senate Select Committee on Small Business, 86th Cong., 1st sess. Washington: Supt. Docs., 1959. Pp. 34.
- Organized professional team sports. Hearings before the Subcommittee on Antitrust and Monopoly, Senate Committee on the Judiciary, 86th Cong., 1st sess., July 28-31, 1959. Washington: Supt. Docs., 1959. Pp. 256.
- Problems of the scrap-steel industry—1959. Hearings before a subcommittee of the Senate Committee on Small Business, 86th Cong., 1st sess., June 24, 1959. Washington: Supt. Docs., 1959. Pp. 176.
- Records of the enforcement department of the Office of Price Administration. Comp., M. H. Fishbein and B. R. Bucher. Prelim. inventories, no. 120. Washington: Nat. Archives and Records Service, 1959. Pp. vi, 65.
- Records of the Shipbuilding Stabilization Committee. Comp., L. Pascal. Prelim. inventories, no. 121. Washington: Nat. Archives and Records Service, 1959. Pp. v, 40.
- Seventy-second annual report on transport statistics in the United States for the year ended December 31, 1958. Washington: Bur. Transport Econ. Stat., Interstate Commerce Comm., 1959.
- Part 1. Railroads, their lessors and proprietary companies. Pp. 452.
 - Part 2. The Pullman Company (sleeping car companies). Pp. 2.
 - Part 3. Railway Express Agency, Inc. (express company). Pp. 3.
 - Part 4. Electric railways. Pp. 22.
 - Part 5. Carriers by water.
 - Part 6. Oil pipe lines. Pp. 37.
 - Part 7. Motor carriers.
 - Part 8. Freight forwarders. Pp. 13.
 - Part 9. Private car lines. Pp. 15.

The state of rural electrification in Europe in 1957. Prepared by Secretariat of Econ. Comm. for Europe. UN pub., no.: 59.II.E/Mim. 10. Geneva: United Nations, 1959. Pp. 61. 40¢.

Land Economics; Agricultural Economics; Economic Geography; Housing

- ALLEN, G. R. Agricultural marketing policies. Oxford: Basil Blackwell, 1959. Pp. xii, 336. 42s.

- BLACK, J. D. Economics for agriculture—selected writings. Ed. by J. P. Cavin, with introductory essays. Cambridge: Harvard Univ. Press, 1959. Pp. xi, 719. \$12.
- PAI, B. N. Principles of agricultural economics. Alahabad: Kitab Mahal, 1959. Pp. ii, 751. Rs 18.
- SANTA CRUZ, H. FAO's role of rural welfare. Food and Agriculture Organ. of UN. Rome, 1959. New York: Columbia Univ. Press, 1959. Pp. xviii, 178. \$2.
- SCHULZ, R. Der weltwirtschaftliche Energieverbund. Versuch einer Bestimmung wichtiger Groessenordnungen des interregionalen und internationalen Austausches kommerzieller Energietraeger. Kieler stud. no. 51. Kiel: Inst. f. Weltwirtschaft, Univ. Kiel, 1959. Pp. viii, 133. DM 12.
- WHARTON, C. R., JR. The U. S. graduate training of Asian agricultural economists. New York: Council on Econ. and Cult. Affairs, 1959. Pp. v, 57.
- Coconut situation. UN Food and Agric. Organ. Bull. no. 1, May 1959. New York: Columbia Univ. Press, 1959. Pp. 28. 50¢.
- Criteria for fixation of water rates and selection of irrigation projects. Nat. Council of Applied Econ. Research. Bombay: Asia Pub. House, 1959. Pp. xi, 156. 28s.
- Facility needs—soil and water conservation research. A report of findings by working group, Dept. of Agric., prepared for Senate Committee on Appropriations, 86th Cong., 1st sess. Washington: Supt. Docs., 1959. Pp. 175.
- Farm labor fact book. U.S. Dept. Lab. Washington: Supt. Docs., 1959. Pp. x, 240. \$1.
- Federal-state relations in the field of water rights. Hearings before the Subcommittee on Irrigation and Reclamation, House Committee on Interior and Insular Affairs, 86th Cong., 1st sess., July 20-23, and August 10, 1959. Washington: Supt. Docs., 1959. Pp. 378.
- Food stamp plans. Hearings before the House Committee on Agriculture, 86th Cong., 1st sess., July 30 and 31, 1959. Washington: Supt. Docs., 1959. Pp. 132.
- High seas salmon conservation. Hearings before the Subcommittee on Merchant Marine and Fisheries, Senate Committee on Interstate and Foreign Commerce, 86th Cong., 1st sess., April-May 1959. Washington: Supt. Docs., 1959. Pp. 318.
- Housing Act of 1959. Report of the Senate Committee on Banking and Currency, 86th Cong., 1st sess. Washington: Supt. Docs., 1959. Pp. 144.
- Landwirtschaft und Markt in Bildern, Worten und Zahlen. *Agrarwirtschaft*, Suppl. no. 1. Hannover: Alfred Strothe, 1959. Pp. 83.
- National grain policies. Food & Agric. Organ. of UN. New York: Columbia Univ. Press, 1959. Pp. 108. \$1.
- Policy and procedure for the development of water resources. Hearings before the House Committee on Public Works, 86th Cong., 1st sess., July 9 and 19, 1959. Washington: Supt. Docs., 1959. Pp. 176.
- The report of investigation on family farm economy in 1956—Kinki district, Japan. Kyoto: Research Inst. Farm Accounting, Kyoto Univ., 1959. Pp. 73.
- 75 housing areas—a housing market analysis. Annual summary, 1959. New York: Housing Securities, 1959. Pp. 16.
- Water resources development in California. San Francisco: U. S. Army, Corps of Engineers, 1959. Pp. 160.
- Yearbook of fishery statistics, 1957. Vol. 8. In English, French, and Spanish. Food and Agric. Organ. of UN. New York: Columbia Univ. Press, 1959. Pp. 329. \$4.
- Yearbook of fishery statistics, 1958, Vol. 9. Production and fishing craft. In English and French, with textural material in Spanish. FAO of the U.N. New York: Columbia Univ. Press, 1959. \$4.50.

Labor Economics

- BEAUMONT, R. A. Productivity and policy decisions. Research monogr. no. 18. New York: Indus. Rel. Counsellors, 1959. Pp. 60. \$2.75.

- DAVKIN, W. L. The distinction between quit and discharge. Research ser. no. 21. Iowa City: Bur. Lab. & Management, State Univ. of Iowa, 1959. Pp. 12. 50¢.
- GREER, S. Last man in—racial access to union power. Glencoe, Ill.: The Free Press, 1959. Pp. 189. \$4.
- HARRINGTON, M. AND JACOBS, P. Labor in a free society. Foreword by C. Kerr. Berkeley and Los Angeles: Univ. California Press, 1959. Pp. xi, 186. \$3.
- HERZBERG, F., MAUSNER, B. AND SNYDERMAN, B. The motivation to work. 2nd ed. New York: John Wiley; London: Chapman & Hall, 1959. Pp. xii, 159. \$4.50.
- MACAULAY, H. H., JR. Fringe benefits and their federal tax treatment. New York: Columbia Univ. Press, 1959. Pp. x, 246. \$6.50.
- MAGOUN, F. A. Cooperation and conflict in industry. New York: Harper, 1959. Pp. xii, 258. \$4.50.
- MCDONALD, L., WITH ASSIST. Leadership dynamics and the trade-union leader. New York: New York Univ. Press, 1959. Pp. xi, 156. \$2.50.
- NORGREN, P. H., WEBSTER, A. N. AND OTHERS. Employing the negro in American industry—a study of management practices. Indus. rel. monogr., no. 17. New York: Indus. Rel. Counsellors, 1959. Pp. xi, 171. \$6.
- PHELPS, O. W. Discipline and discharge in the unionized firm. Berkeley & Los Angeles: Univ. California Press, 1959. Pp. 149. \$5.
- PHELPS BROWN, E. H. The growth of British industrial relations. A study from the standpoint of 1906-1914. New York: St. Martin's Press; London: Macmillan, 1959. Pp. xxxvii, 414. \$9.50.
- ROBERTS, B. C. Trade unions in a free society. London: Inst. Econ. Affairs, 1959. Pp. 120. 9s. 6d.
- Farm labor fact book. Washington: Dept. Labor. Pp. 240.
- The international standardisation of labour statistics. Geneva: Internat. Lab. Off., 1959. Pp. v, 121. \$1.
- Labour costs in European industry. Geneva: Internat. Lab. Off., 1959. Pp. 169. \$1.25.
- The 1959 labor dispute in the steel industry—report to the President. By President's Board of Inquiry [on the steel strike]. Washington: Supt. Docs., 1959. Pp. 37.
- Pension plans under collective bargaining late 1958, Pts. 1 and 2. Prepared by W. W. Kolodrubetz and H. L. Levin. Bur. Lab. Stat. Bull. no. 1259. Washington: Supt. Docs., 1959. Pp. 29.
- Proceedings of the ninth annual Labor-Management Conference, April 10 and 11, 1959. Morgantown: Inst. Indus. Rel., West Virginia Univ., 1959. Pp. vii, 89.
- Second interim report of the Senate Select Committee on Improper Activities in the Labor or Management Field, 86th Cong., 1st sess. Washington: Supt. Docs., 1959. Pp. 310.

Population; Welfare Programs; Standards of Living

- HANDLIN, O. The newcomers—Negroes and Puerto Ricans in a changing metropolis. Cambridge: Harvard Univ. Press, 1959. Pp. xii, 171. \$4.
- ROCKWELL, G. R. Income and household size; their effects on food consumption. U. S. Dept. Agric., Market. research report no. 340. Washington: Supt. Docs., 1959. Pp. 152.
- TIBBITTS, C., comp. and ed. Aging and social health in the United States and Europe. Rept. of International Seminar, Merano, Italy, July 9-13, 1957. Ann Arbor: Div. Gerontology, Univ. Michigan, 1959. Pp. 186.
- WILHELMS, F. T. AND HEIMERL, R. P. Consumer economics—principles and problems. 2nd ed. Accompanied by workbook. New York: Gregg Pub. Div., McGraw-Hill, 1959. Pp. x, 534; 126. \$4.48; \$1.64.
- International repertory of institutions conducting population studies. UNESCO repts. and papers in soc. sci., no. 11. In French and English. New York: Columbia Univ. Press, 1959. Pp. 240. \$2.50.

Self-employed Individuals' Retirement Act of 1959. Hearings before the Senate Committee on Finance, 86th Cong., 1st sess., June 17, 18, July 15, and Aug. 11, 1959. Washington: Supt. Docs., 1959. Pp. 406.

Related Disciplines

- ASHTON, T. S. Economic fluctuations in England—1700-1800. London: Oxford Univ. Press, 1959. Pp. vi, 199. 21s.
- BLOUGH, R. Free man and the corporation. New York: McGraw-Hill, 1959. Pp. xiii, 126. \$4.50.
- GLENNY, L. A. Autonomy of public colleges—the challenge of coordination. New York: McGraw-Hill, 1959. Pp. xvi, 325. \$5.95.
- GORDON, R. A. AND HOWELL, J. E. Higher education for business. New York: Columbia Univ. Press, 1959. Pp. xi, 491.
- GREENOUGH, W. C. AND KING, F. P. Retirement and insurance plans in American colleges. New York: Columbia Univ. Press, 1959. Pp. xiii, 480. \$8.50.
- GROPPER, G. L. AND FITZPATRICK, R. Who goes to graduate school? A study of the decision to enter graduate training. Pittsburgh: Amer. Inst. Research, 1959. Pp. vi, 66.
- GUILBAUD, G. T. What is cybernetics? Transl. by V. Mackay. London: Heinemann, 1959. Pp. viii, 126. 10s. 6d.
- HOOVER, H. An American epic. Introduction: The relief of Belgium and northern France—1914-1930. Vol. 1. Chicago: Henry Regnery, 1959. Pp. xxiii, 477. \$6.50.
- JOHNSON, P. O. AND RAO, M. S. Modern sampling methods: theory, experimentation, application. Minneapolis: Univ. Minnesota Press, 1959. Pp. 87. \$4.
- KIDD, C. V. American universities and federal research. Cambridge: Belknap Press of Harvard Univ. Press, 1959. Pp. xi, 272. \$6.
- LABAREE, L. W., BELL, W. J., JR., AND OTHERS, ed. The papers of Benjamin Franklin. Vol. 1, Jan. 6, 1706-Dec. 31, 1734. New Haven: Yale Univ. Press, 1959. Pp. lxxxviii, 400. \$7.50.
- LERNER, D., ed. Evidence and inference. Essays originated in the Hayden Colloquium on Scientific Concept and Method, Mass. Inst. Tech. Glencoe, Ill.: Free Press, 1959. Pp. 164. \$4.
- LEVENS, A. S. Nomography. 2nd ed. New York: John Wiley; London: Chapman & Hall, 1959. Pp. viii, 296. \$8.50.
- LEWIS, J. P. An introduction to mathematics for students of economics. London: Macmillan, 1959. Pp. x, 394. 40s.
- NEWCOMER, M. A century of higher education for American women. New York: Harper, 1959. Pp. xii, 256. \$5.
- PEIRCE, C. The Roosevelt Panama libel cases. A factual study of a controversial episode in the career of Teddy Roosevelt. New York: Greenwich, 1959. Pp. 150. \$3.50.
- PIERSON, F. C. AND OTHERS. The education of American businessmen: A study of university-college programs in business administration. New York: McGraw-Hill, 1959. Pp. xvii, 740. \$7.50.
- PRESTON, C., ed. The world of the Wall Street Journal—Main Street and beyond. New York: Simon & Schuster, 1959. Pp. xxv, 485. \$6.50.
- REISSMAN, L. Class in American society. Glencoe, Ill.: Free Press, 1959. Pp. xii, 436. \$6.75.
- STERNBERG, F. The military and industrial revolution of our time. New York: Praeger, 1959. Pp. xiv, 359. \$5.75.
- Education for the economic challenges of tomorrow. A report of a symposium in conjunction with the 10th anniversary of the Joint Council on Economic Education, 1949-1959. New York: JCEE, 1959. Pp. 63.
- Research, publications, and other activities. Santiago: Inst. de Econ., Univ. de Chile, 1959. Pp. 26.

PERIODICALS

General Economics; Methodology

- FRITSCH, B. Theorie und empirische Forschung in der Sozialwissenschaft. *Zeitschr. f. Nationalök.*, Spring-Summer 1959, pp. 263-69.
- KEIRSTEAD, B. S. Professor Shackle on time in economics. *Metroeconomica*, Apr.-Aug. 1959, pp. 44-50.
- KIRSCHEN, E. S. AND MORISSENS, L. Les objectifs de la politique économique. *Cahiers Écon. de Bruxelles*, Oct. 1959, pp. 109-58.
- LACHMANN, L. Professor Shackle on the economic significance of time. *Metroeconomica*, Apr.-Aug. 1959, pp. 64-73.
- MACHLUP, F. Statics and dynamics: kaleidoscopic words. *So. Econ. Jour.*, Oct. 1959, pp. 91-110.
- MICHA, J. Problèmes de gestion opérationnelle des stocks. *Annales de Sci. Écon. Appliquées*, Oct. 1959, pp. 395-457.
- NIKSA, V. The role of quantitative thinking in modern economic theory. *Rev. Soc. Econ.*, Sept. 1959, pp. 151-73.
- ROBBINS, L. The present position of Economics. *Riv. di Pol. Econ.*, Aug.-Sept. 1959, pp. 1347-63.
- ROTWEIN, E. On "The Methodology of Positive Economics." *Quart. Jour. Econ.*, Nov. 1959, pp. 554-75.
- SERAPHIM, H.-J. Die strukturelle Mehrschichtigkeit des Erkenntnisobjekts der Nationalökonomie und ihre methodologischen Folgerungen. *Jahrb. Sozialwissensch.*, 1959, 4/10 (2), pp. 126-40.
- SPIEGEL, H. W. A consideration of some current criticisms of economic theory. *Arquivos Econ. (Banco do Brasil)*, Dec. 1958, pp. 7-31.
- STIGLER, G. The politics of political economists. *Quart. Jour. Econ.*, Nov. 1959, pp. 522-32.
- TUCHTFELD, E. Zur Theorie der Wirtschaftspolitik—Entwicklungstendenzen und Probleme. *Jahrb. Sozialwissensch.*, 1959, 4/10 (2), pp. 168-92.
- ZEUTHEN, F. Science and welfare in economic policy. *Quart. Jour. Econ.*, Nov. 1959, pp. 513-21.

Price and Allocation Theory; Income and Employment Theory; Related Empirical Studies; History of Economic Thought

- AKERMAN, J. Shackle's system and theories of business cycles. *Metroeconomica*, Apr.-Aug. 1959, pp. 3-11.
- ALBRECHT, G. Der junge Schmoller und die Arbeiterfrage. *Schmollers Jahrb.*, 1959, 79 (5), pp. 1-20.
- AOKI, T. On the cost factors in the location theory of industry—principle of approach and non-approach. *Annals Hitotsubashi Acad.*, Aug. 1959, pp. 91-107.
- ARCHIBALD, G. C. Utility, risk, and linearity. *Jour. Pol. Econ.*, Oct. 1959, pp. 437-50.
- . Welfare economics, ethics, and essentialism. *Economica*, Nov. 1959, pp. 316-27.
- ARROW, K. J. Functions of a theory of behavior under uncertainty. *Metroeconomica*, Apr.-Aug. 1959, pp. 12-20.
- BAILEY, M. J. Formal criteria for investment decisions. *Jour. Pol. Econ.*, Oct. 1959, pp. 476-88.

- BARAN, P. A. *Réflexions sur la sous-consommation*. (With English summary.) *Econ. Appliquée*, Jan.-June 1959, pp. 113-30.
- BARKAI, H. Ricardo on factor prices and income distribution in a growing economy. *Economica*, Aug. 1959, pp. 240-50.
- BARNA, T. Measuring capital and the length of life of capital goods. *Cahiers Écon. de Bruxelles*, Oct. 1959, pp. 71-82.
- BENTZEL, R. AND JOHANSSON, Ö. Om homogenitet i produktionsfunktioner. (On homogeneity in production functions.) *Ekon. Tids.*, Sept. 1959, pp. 146-79.
- BETTELHEIM, CH. Variations du taux de profit et accroissement de la productivité du travail. (With English summary.) *Econ. Appliquée*, Jan.-June 1959, pp. 81-112.
- BUCHANAN, J. M. Positive economics, welfare economics, and political economy. *Jour. Law and Econ.*, Oct. 1959, pp. 124-38.
- CHERUBINO, S. Osservazioni sulle economie astratte. *Riv. di Pol. Econ.*, Oct. 1959, pp. 1559-73.
- CREMONA DELLACASA, D. Note sulla curva di offerta. *Giorn. d. Econ.*, Mar.-Apr. 1959, pp. 179-89.
- DARLING, P. G. Manufacturers' inventory investment, 1947-1958: an application of acceleration analysis. *Am. Econ. Rev.*, Dec. 1959, pp. 950-62.
- DAVID, M. Welfare, income, and budget needs. *Rev. Econ. Stat.*, Nov. 1959, pp. 393-99.
- DE JANOSI, P. E. A note on the relationship between earning expectations and new car purchases. *Jour. Am. Stat. Assoc.*, Sept. 1959, pp. 575-77.
- DEMARIA, G. Nuove annotazioni alla teoria marxista dei prezzi di produzione. *Giorn. d. Econ.*, May-June 1959, pp. 252-67.
- DILLON, J. L. AND MAULDON, R. G. Inventory analysis and the economics of fodder conservation. *Econ. Record*, Aug. 1959, pp. 209-18.
- DOWNIE, J. Taux relatifs de profit. (With English summary.) *Econ. Appliquée*, Jan.-June 1959, pp. 67-80.
- DOWSETT, W. T. Problems of duopoly and the theory of games. *Econ. Record*, Aug. 1959, pp. 219-25.
- DUNCAN, D. C. The concept of potential surprise: can it serve better than probability as a means of analysing uncertainty? *Metroeconomica*, Apr.-Aug. 1959, pp. 21-36.
- EDWARDS, C. Resource fixity and farm organization. *Jour. Farm Econ.*, Nov. 1959, pp. 747-59.
- EVANS, G. H., JR. Business entrepreneurs, their major functions and related tenets. *Jour. Econ. Hist.*, June 1959, pp. 250-70.
- EYSKENS, M. De rationalisatie van het gedrag in risico-omstandigheden—een terugkeer tot de cardinaliteit en de meetbaarheid van het nut? (With English summary.) *Tijdschrift v. Econ.*, 1959, 4 (3), pp. 317-38.
- FERGUSON, C. E. Some remarks on dynamic price theory. *Jahrb. f. Nationalök. und Stat.*, Oct. 1959, pp. 262-74.
- FOURGAUD, C. AND NATAF, A. Consommation en prix et revenu réels et théorie des choix. *Econometrica*, July 1959, pp. 329-54.
- FROELICH, W. Some problems of income determination and welfare. *Zeitschr. f. Nationalök.*, Spring-Summer 1959, pp. 246-62.
- FUÀ, G. Sulla politica del risparmio. *Giorn. d. Econ.*, May-June 1959, pp. 291-316.
- GAREGNANI, P. La misurazione del capitale nella teoria Ricardiana del valore e della distribuzione. *Giorn. d. Econ.*, Mar.-Apr. 1959, pp. 117-47.
- GORMAN, W. M. Separable utility and aggregation. *Econometrica*, July 1959, pp. 469-81.
- GROTEWOLD, A. Von Thünen in retrospect. *Econ. Geog.*, Oct. 1959, pp. 346-55.
- GRÜNBAUM, I. Om cross-section analyse af investeringsteorier. *Nationaløk. Tids.*, 1959, 97 (3-4), pp. 177-91.

- GUITTON, H. Estructura, coyuntura y conjetura. *Rev. de Econ. y Estad. (Argentina)*, 1959, 11 (1), pp. 5-18.
- HARROD, R. Domar and dynamic economics. *Econ. Jour.*, Sept. 1959, pp. 451-64.
- HEGELAND, H. Prösbildning och jämvikt. *Ekon. Samfundets Tids.*, Aug. 12, 1959, pp. 122-36.
- HIESER, R. O. The conditions for oligopolistic price interdependence. *Econ. Record*, Aug. 1959, pp. 187-95.
- HILL, T. P. An analysis of the distribution of wages and salaries in Great Britain. *Econometrica*, July 1959, pp. 355-81.
- HIRSCH, W. Z. Interindustry relations of a metropolitan area. *Rev. Econ. Stat.*, Nov. 1959, pp. 360-69.
- HISHIYAMA, I. Law of increasing returns in the neo-classical theory. *Kyoto Univ. Econ. Rev.*, Oct. 1958, pp. 17-34.
- HOGAN, W. The equality of replacement and depreciation. *Econ. Record*, Aug. 1959, pp. 196-208.
- KAHN, R. F. Exercises in the analysis of growth. *Oxford Econ. Papers*, June 1959, pp. 143-56.
- KALDOR, N. Economic growth and the problem of inflation—I, II. *Economica*, Aug., Nov. 1959, pp. 212-26; 287-98.
- KEIRSTEAD, B. S. Intérêt, profit et accumulation du capital. (With English summary.) *Econ. Appliquée*, Jan.-June 1959, pp. 53-66.
- KESLER, F. AND STERN, R. H. Competition, contract, and vertical integration. *Yale Law Jour.*, Nov. 1959, pp. 1-129.
- KLEIN, L. R. AND BALL, R. J. Some econometrics of the determination of absolute prices and wages. *Econ. Jour.*, Sept. 1959, pp. 465-82.
- KNOL, J. G. Enkele aspecten van het vraagstuk der rechtvaardige. *De Economist*, Oct. 1959, pp. 692-707.
- KRAVIS, J. B., Relative income shares in fact and theory. *Am. Econ. Rev.*, Dec. 1959, pp. 917-49.
- KREININ, M. E. Analysis of used cars purchases. *Rev. Econ. Stat.*, Nov. 1959, pp. 419-25.
- KRELLE, W. A theory on rational behaviour under uncertainty. *Metroeconomica*, Apr.-Aug. 1959, pp. 51-63.
- KRENGEL, R. Les relations entre le capital, l'emploi et la production dans l'industrie de la République Fédérale Allemande. *Cahiers Econ. de Bruxelles*, Oct. 1959, pp. 83-100.
- KÜNG, E. Wirtschaft und Wohlfahrt. *Schweiz. Zeitschr. f. Volkswirtschaft und Stat.*, Sept. 1959, pp. 289-300.
- KURIHARA, K. K. Theoretical objections to agriculture-biased economic development. *Indian Jour. Econ.*, Oct. 1958, pp. 163-70.
- LACHMANN, L. M. Böhm-Bawerk und die Kapitalstruktur. *Zeitschr. f. Nationalök.*, Spring-Summer 1959, pp. 235-45.
- LAMPFMAN, R. L. Changes in the share of wealth held by top wealth-holders, 1922-1956. *Rev. Econ. Stat.*, Nov. 1959, pp. 379-92.
- LAUSCHMANN, E. Zur Frage der "social costs." *Jahrb. Sozialwissensch.*, 1959, 4/10 (2), pp. 193-220.
- MABUCHI, T. Interest, income and stability condition. *Bull. Univ. Osaka Prefecture*, 1959, 3, pp. 110-21.
- MARSCHAK, T. Centralization and decentralization in economic organizations. *Econometrica*, July 1959, pp. 399-430.
- MAYER, H. Marx on Bakunin: a neglected text. *Cahiers de l'Inst. de Sci. Econ. Appliquée*, Oct. 1959, pp. 91-106.
- McMANUS, M. A theorem on undercompensated price changes. *Économica*, Nov. 1959, pp. 350-55.

- MEHTA, J. K. Functions of production and the true nature of incomes. *Riv. Internaz. di Sci. Econ. e Com.*, Oct. 1959, pp. 932-38.
- MICKWITZ, G. Disaggregering och deskriptiv realism i internationell och finländsk teori. *Ekon. Samfundets Tids.*, Aug. 12, 1959, pp. 137-87.
- MURPHREE, I. Darwinism in Thorstein Veblen's economics. *Soc. Research*, Autumn 1959, pp. 311-24.
- NIKHANS, J. Monopolpreis, vertikale Integration und Mengenrabatt. *Schweiz. Zeitschr. f. Volkswirtschaft und Stat.*, Sept. 1959, pp. 328-34.
- . Reflections on Shackle, probability and our uncertainty about uncertainty. *Metroeconomica*, Apr.-Aug. 1959, pp. 74-88.
- OSHIMA, H. T. Income originating in the models of Harrod and Domar. *Econ. Jour.*, Sept. 1959, pp. 443-50.
- PROUTS, R. W. AND FERGUSON, C. E. Market classification systems in theory and policy. *So. Econ. Jour.*, Oct. 1959, pp. 111-18.
- PORTER, R. C. Risk, incentive and the technique of low-income farmer. *Indian Econ. Jour.*, July 1959, pp. 1-27.
- PREDETTI, A. Sui recenti contributi di E. H. Chamberlin. *Econ. Internaz.*, Aug. 1959, pp. 447-69.
- PREISER, E. Nochmals: Investition und Zins. Eine Revision. *Jahrb. f. Nationalök. und Stat.*, Oct. 1959, pp. 241-50.
- ROBINSON, J. Accumulation and the production function. *Econ. Jour.*, Sept. 1959, pp. 433-42.
- . Depreciation. *Riv. di Pol. Econ.*, Nov. 1959, pp. 1703-17.
- . Some problems of definition and measurement of capital. *Oxford Econ. Papers*, June 1959, pp. 157-66.
- ROTTENBERG, S. Monopoly in the labor market: the "bummarees" of London's wholesale meat market. *Indus. Lab. Rel. Rev.*, Oct. 1959, pp. 54-63.
- RUBEL, M. Les premières lectures économiques de Karl Marx (II). *Cahiers de l'Inst. de Sci. Écon. Appliquée*, Oct. 1959, pp. 51-72.
- SCHÉELE, E. Theorie der Einkommensverteilung u. generelle Gleichgewichtsanalyse. *Jahrb. Sozialwissenschaft*, 1959, 4/10 (2), pp. 141-67.
- SCHREIBER, W. Investieren, Sparen, Wirtschaftswachstum und Eigentumsbildung. *Jahrb. f. Nationalök. und Stat.*, Oct. 1959, pp. 251-61.
- SHINOHARA, M. The structure of saving and the consumption function in postwar Japan. *Jour. Pol. Econ.*, Dec. 1959, pp. 589-603.
- SOLO, R. Inflation in the context of a mixed economy. *Can. Jour. Econ. Pol. Sci.*, Nov. 1959, pp. 471-83.
- STREETEN, P. Principio de compensación. *Rev. de Econ. Pol.*, Apr. 1959, pp. 5-23.
- SWEETZ, P. M. Crítica de Veblen a la economía Norteamericana. *Investigacion Econ.*, 1959, 19 (3), pp. 501-18.
- VELARDE, J. Localización y economía espacial. *Rev. de Econ. Pol.*, Apr. 1959, pp. 68-82.
- VERDOORN, P. J. The role of capital in long-term projection models. *Cahiers Écon. de Bruxelles*, Oct. 1959, pp. 49-70.
- VITELLO, V. Su alcuni aspetti della formazione dei prezzi nelle economie pianificate. (With English summary.) *Econ. Internaz.*, Aug. 1959, pp. 419-41.
- WEGGE, L. Een gedragsvergelijking van de Belgische consument 1948-1957. (With English summary.) *Tijdschrift v. Econ.*, 1959, 4 (3), pp. 339-48.
- WOLKESDORF, L. Zur Frage der Vermögensbildung in breiten Schichten. *Finanzarchiv*, 1959, 20 (1), pp. 74-92.
- WOLGIN, H. Inflation and the price mechanism. *Jour. Pol. Econ.*, Oct. 1959, pp. 463-75.
- WORLAND, S. Justice and welfare economics. *Rev. Soc. Econ.*, Sept. 1959, pp. 97-111.

- WRAY, M. Professor Shackle's theory and short period entrepreneurial decisions in the women's clothing industry. *Metroeconomica*, Apr.-Aug. 1959, pp. 119-36.
- The wage-push inflation thesis, 1950-1957: comment by D. W. Johnson; reply by L. E. Gallaway. *Am. Econ. Rev.*, Dec. 1959, pp. 1033-36.

Economic History; Economic Development; National Economies

- ÅKERMAN, J. Une théorie générale du développement économique est-elle concevable? (With English summary.) *Écon. Appliquée*, Jan.-June 1959, pp. 235-52.
- AVENTUR, J. Quelques aspects de la lutte contre l'inflation dans les pays de la Communauté Européenne. *Rev. Sci. Fin.*, Oct.-Dec. 1959, pp. 630-58.
- BAER, W. Puerto Rico: an evaluation of a successful development program. *Quart. Jour. Econ.*, Nov. 1959, pp. 645-71.
- BLITZ, R. C. Maintenance costs and economic development. *Jour. Pol. Econ.*, Dec. 1959, pp. 560-70.
- BUQUET, L. Croissance et créations économiques collectives. (With English summary. *Écon. Appliquée*, Jan.-June 1959, pp. 131-42.
- CRIST, R. E. Land for the fellahin, IX. *Am. Jour. Econ. Soc.*, Oct. 1959, pp. 81-90.
- DE KOCK, M. H. Economic trends in the Union, 1958/9. *So. Afr. Jour. Econ.*, Sept. 1959, pp. 203-18.
- FOFANOV, I. Some problems in stimulating production and introducing new technique. *Prob. Econ.*, Oct. 1959, pp. 9-12.
- FUKUHARA, G. John Stuart Mill and the backward countries. *Bull. Univ. Osaka Prefecture*, 1959, 3, pp. 64-75.
- GALLAWAY, L. Some aspects of the economic structure of depressed industrial areas. *Land Econ.*, Nov. 1959, pp. 337-46.
- GASPARETTO, M. M. Ostacoli opposti allo sviluppo economico della Turchia dalle condizioni arretrate del Paese. (With English summary.) *Riv. Internaz. di Sci. Econ. e Com.*, Oct. 1959, pp. 964-77.
- GITTINGER, J. P. Communist land policy in North Viet Nam. *Far East Surv.*, Aug. 1959, pp. 113-126.
- GLEASON, A. H. Chronic underemployment: a comparison between Japan and the United States. *Annals Hitotsubashi Acad.*, Aug. 1959, pp. 64-80.
- GLEJSER, H. Croissances industrielles comparées de l'Union Soviétique et des États-Unis. *Cahiers Écon. de Bruxelles*, Apr. 1959, pp. 379-408.
- GRUSON, C. Prix, profit et développement économique. Problèmes de l'optimum global. (With English summary.) *Écon. Appliquée*, Jan.-June 1959, pp. 27-52.
- HACCOÛ, J. F. AND SCHOLTE, G. Le développement économique de l'Indonésie: I. *Cahiers de l'Inst. de Sci. Écon. Appliquée*, no. 87, Aug. 1959, pp. 1-65.
- HART, A. G. Fluctuations et croissance économique en France (1820-1952). (With English summary.) *Écon. Appliquée*, Jan.-June 1959, pp. 205-34.
- HARTWELL, R. M. Interpretations of the industrial revolution in England. *Jour. Econ. Hist.*, June 1959, pp. 229-49.
- HORIE, Y. The feudal states and the commercial society in the Tokugawa period. *Kyoto Univ. Econ. Rev.*, Oct. 1958, pp. 1-16.
- KAPP, K. W. River valley projects in India: their direct effects. *Econ. Develop. and Cult. Change*, Oct. 1959, pp. 24-47.
- KESSEL, R. A. AND ALCHIAN, A. A. Real wages in the North during the Civil War: Mitchell's data reinterpreted. *Jour. Law and Econ.*, Oct. 1959, pp. 95-113.
- KRIVINE, D. Private enterprise in an under-developed country. *Pol. Sci. Quart.*, Oct.-Dec. 1959, pp. 379-88.
- KUZNETS, S. La croissance économique des petites nations. (With English summary.) *Écon. Appliquée*, Jan.-June 1959, pp. 143-66.

- MEYNAUD, J. Le nouveau cadre institutionnel et la politique économique. *Rev. Econ.*, Sept. 1959, pp. 666-701.
- MONTUORI, M. Le développement économique de l'Irak depuis le second conflit mondial. *Cahiers de l'Inst. de Sci. Econ. Appliquée*, no. 88, Sept. 1959, pp. 1-112.
- MURPHY, G. G. S. AND ZELLNER, A. Sequential growth, the labor-safety-valve doctrine and the development of American unionism. *Jour. Econ. Hist.*, Sept. 1959, pp. 402-21.
- MYRDAL, G. Indian economic planning. *Pop. Rev.*, Jan. 1959, pp. 3-32.
- NOTKIN, A. On the rates of expanded reproduction in the period of the unfolding construction of Communism. *Prob. Econ.*, Sept. 1959, pp. 3-9.
- NUTTER, G. W. The structure and growth of Soviet industry: a comparison with the United States. *Jour. Law and Econ.*, Oct. 1959, pp. 147-74.
- PAELINCK, J. Possibilisme et pôles de croissance: phénomènes de prestige et de propagation dans le cadre de l'industrialisation néerlandaise. (With English summary.) *Écon. Appliquée*, Jan.-June 1959, pp. 167-204.
- PEPELASSIS, A. A. The legal system and economic development of Greece. *Jour. Econ. Hist.*, June 1959, pp. 173-98.
- PESEK, B. P. Soviet and American inventory-output ratios once again. *Am. Econ. Rev.*, Dec. 1959, pp. 1030-32.
- RODWIN, L. Una política nacional para desarrollo regional. *Investigacion Econ.*, 1959, 19 (3), pp. 457-66.
- ROSOVSKY, H. Japanese capital formation: the role of the public sector. *Jour. Econ. Hist.*, Sept. 1959, pp. 350-73.
- ROTTENBERG, S. Economic policy in the poor countries. *Jour. Law and Econ.*, Oct. 1959, pp. 139-46.
- RUTTAN, V. W. Usher and Schumpeter on invention, innovation, and technological change. *Quart. Jour. Econ.*, Nov. 1959, pp. 596-606.
- SAMUELS, L. H. Some aspects of industrial development in South Africa. *So. Afr. Jour. Econ.*, Sept. 1959, pp. 175-92.
- SASTRY, D. U. Technological choices, capital intensity and economic development. *Asian Econ. Rev.*, Aug. 1959, pp. 432-45.
- SAYIGH, Y. A. The place of agriculture in economic development. *Land Econ.*, Nov. 1959, pp. 297-305.
- SCHATZ, S. P. Underutilized resources, "directed demand," and deficit financing. *Quart. Jour. Econ.*, Nov. 1959, pp. 633-44.
- SCHMIDT, G. Causa y expansión de la Revolución Industrial. *Rev. de Econ. Pol.*, Apr. 1959, pp. 83-121.
- SCHULTZ, T. W. El papel de la tierra en el desarrollo económico. *El Trimestre Econ.*, Oct.-Dec. 1959, pp. 561-87.
- SCHUMANN, C. G. W. Aspects of economic growth with special reference to South Africa. *So. Afr. Jour. Econ.*, Sept. 1959, pp. 163-74.
- SCHWENTER, J. J. Betriebswirtschaftliche Aspekte des technischen Fortschritts. *Schweiz. Zeitschr. f. Volkswirtschaft und Stat.*, Sept. 1959, pp. 301-16.
- SCITOVSKY, T. Crissance balancée ou non balancée? (With English summary.) *Écon. Appliquée*, Jan.-June 1959, pp. 7-22.
- SOHMEN, E. Competition and growth: the lesson of West Germany. *Am. Econ. Rev.*, Dec. 1959, pp. 986-1003.
- STRASSMANN, W. P. Creative destruction and partial obsolescence in American economic development. *Jour. Econ. Hist.*, Sept. 1959, pp. 335-49.
- STREET, J. H. Bases para una teoría general del desarrollo económico. *Rev. de Econ. y Estad. (Argentina)*, 1958, 11 (1), pp. 19-30.
- STREETEN, P. Unbalanced growth. *Oxford Econ. Papers*, June 1959, pp. 167-90.
- SURÁNYI-UNGER, T. Finanzwirtschaftliche Grundlagen der Kapitalbildung in Südosteuropa. *Schmollers Jahrb.*, 1959, 79 (5), pp. 21-60.

- URQUHART, M. C. Capital accumulation, technological change, and economic growth. *Can. Jour. Econ. Pol. Sci.*, Nov. 1959, pp. 411-30.
- U TUN WAI. The relation between inflation and economic development: a statistical inductive study. *Internat. Mon. Fund Staff Papers*, Oct. 1959, pp. 302-17.
- VAN MELKEBEKE, A. Sparen en investeren in onderontwikkelde gebieden. (With English summary.) *Tijdschrift v. Econ.*, 1959, 4 (3), pp. 367-91.
- WÆLBROECK, J. Le rythme d'expansion de l'économie belge de 1948 à 1957. *Cahiers Econ. de Bruxelles*, Jan. 1959, pp. 321-44.
- WORSWICK, G. D. N. Mrs. Robinson on simple accumulation. *Oxford Econ. Papers*, June 1959, pp. 125-42.
- YAMADA, Y. On the method of the economic plan (1958-62) of Japan. *Annals Hitotsubashi Acad.*, Aug. 1959, pp. 21-36.
- ZACORIN, P. The social interpretation of the English revolution. *Jour. Econ. Hist.*, Sept. 1959, pp. 376-401.
- ZHAMIN, V. On the transition to socialism by economically underdeveloped countries. *Prob. Econ.*, Oct. 1959, pp. 32-37.
- Regional development, economic growth and employment in France. *Internat. Lab. Rev.*, Oct. 1959, pp. 289-318.
- Time-preference and economic growth: comment by F. M. Westfield; reply by W. Leontief. *Am. Econ. Rev.*, Dec. 1959, pp. 1037-41.

Statistical Methods; Econometrics; Social Accounting

- CARBONNELLE, C. Recherches sur l'évolution de la production en Belgique de 1900 à 1957. *Cahiers Econ. de Bruxelles*, Apr. 1959, pp. 353-78.
- CARBONNELLE, C. AND CONTZEN-LACROIX, A. Les indices de la production industrielle en Belgique. *Cahiers Econ. de Bruxelles*, Apr. 1959, pp. 497-503.
- CHAKRABARTI, M. C. Linear programming. *Asian Econ. Rev.*, Aug. 1959, pp. 367-73.
- DORRANCE, G. S. Balance sheets in a system of economic accounts. *Internat. Mon. Fund Staff Papers*, Oct. 1959, pp. 168-209.
- FISHER, F. M. Generalization of the rank and order conditions for identifiability. *Econometrica*, July 1959, pp. 431-47.
- FLEXNER, W. W. An analysis of the nature of aggregates at constant prices. *Rev. Econ. Stat.*, Nov. 1959, pp. 400-4.
- HANSEN, B. AND WALLBERG, U. Savings and income changes. *Skandinav. Bank. Quart. Rev.*, Oct. 1959, pp. 113-119.
- HICKS, E. The theory and use of financing accounts. *Internat. Mon. Fund Staff Papers*, Oct. 1959, pp. 159-67.
- KAPLAN, N. M. Some methodological notes on the deflation of construction. *Jour. Am. Stat. Assoc.*, Sept. 1959, pp. 535-55.
- MAILLET, P. Les comptes de la nation. *Rev. d'Econ. Pol.*, July-Oct. 1959, pp. 452-76.
- POELMANS, J. La consommation en Belgique de 1948 à 1958. *Cahiers Econ. de Bruxelles*, July 1959, pp. 601-55.
- WÆLBROECK, J. Essai d'explication de l'évolution de la consommation privée en Belgique de 1949 à 1957. *Cahiers Econ. de Bruxelles*, Apr. 1959, pp. 409-26.
- WOLFE, P. The Simplex Method for quadratic programming. *Econometrica*, July 1959, pp. 382-98.
- La Comptabilité nationale de la Belgique (1948-1958): par le Groupe d'études de la Comptabilité nationale. *Cahiers Econ. de Bruxelles*, Oct. 1959, pp. 3-38.
- L'évolution des revenus en Belgique de 1948 à 1957. *Cahiers Econ. de Bruxelles*, Jan. 1959, pp. 215-46.
- Le produit national brut de 1948 à 1958. *Cahiers Econ. de Bruxelles*, July 1959, pp. 509-10.
- Le produit national brut calculé par l'analyse des revenus. *Cahiers Econ. de Bruxelles*, Jan. 1959, pp. 207-14.

Economic Systems; Planning and Reform; Cooperation

- ARDANT, G. Regional planning and the problem of regional economy. *Internat. Soc. Sci. Jour.*, 1959, 11 (3), pp. 369-79.
- BANFIELD, E. C. Ends and means in planning. *Internat. Soc. Sci. Jour.*, 1959, 11 (3), pp. 361-68.
- HEIMANN, E. Après le succès du capitalisme—ou allons-nous? (With English summary.) *Econ. Appliquee*, Jan.-June 1959, pp. 253-74.
- LANGE, O. Tres ensayos sobre planeación económica. *El Trimestre Econ.*, Oct.-Dec. 1959, pp. 583-625.
- MONTIAS, J. M. Planning with material balances in Soviet-type economies. *Am. Econ. Rev.*, Dec. 1959, pp. 963-85.
- NUSSBAUMER, A. Zur Frage der Wirtschaftsrechnung in der Zentralverwaltungswirtschaft. *Zeitschr. f. Nationalök.*, Spring-Summer 1959, pp. 270-301.
- TINBERGEN, J. Problems of planning economic policy. *Internat. Soc. Sci. Jour.*, 1959, 11 (3), pp. 351-60.
- TOURETSKI, CH. Regional planning of the national economy in the U.S.S.R. and its bearings on regionalism. *Internat. Soc. Sci. Jour.*, 1959, 11 (3), pp. 380-92.
- VINCENS, J. De la planification indicative. *Rev. Sci. Fin.*, Oct.-Dec. 1959, pp. 575-95.

Business Fluctuations

- ANDRIESEN, J. E. De conjunctuurpolitiek in Westeuropes verband. *De Economist*, Oct. 1959, pp. 657-77.
- KARJALAINEN, A. Eräitä raha- ja finanssipolitiikan koordinoitintongelmaan liittyviä näkökohtia. (With English summary.) *Kansantaloudellinen Aikakauskirja*, 1959, 3, pp. 221-28.
- MENDELSSOHN, R. C. Three BLS series as business cycle turn signals. *Mo. Lab. Rev.*, Sept. 1959, pp. 973-76.
- MUSSON, A. E. The great depression in Britain, 1873-1896. *Jour. Econ. Hist.*, June 1959, pp. 199-228.
- TRESS, R. C. The contribution of economic theory to economic prognostication. *Economica*, Aug. 1959, pp. 194-211.
- ZAPPA, G. La ricerca stabilità dell'economia delle aziende e dei mercati. (With English summary.) *Risparmio*, Sept. 1959, pp. 1333-58.
- Fiscal and monetary policies to fight inflation: four articles by B. U. Ratchford, H. S. Ellis, C. C. Balderston, B. W. Sprinkel. *Annals Am. Acad. Pol. Soc. Sci.*, Nov. 1959, pp. 101-32.

Money, Credit and Banking; Monetary Policy; Consumer Finance; Mortgage Credit

- AHRENSDORF, J. Central bank policies and inflation: a case study of four less developed economies, 1949-57. *Internat. Mon. Fund Staff Papers*, Oct. 1959, pp. 274-301.
- BALOGH, T. Le coût de la convertibilité et le rôle de la place de Londres. *Cahiers de l'Inst. de Sci. Econ. Appliquée*, no. 92, Oct. 1959, pp. 75-112.
- BLESSING, K. Fragen der deutschen Währungspolitik. *De Economist*, Oct. 1959, pp. 678-91.
- CAGLE, C. H. Security pledged on business loans at member banks. *Fed. Res. Bull.*, Sept. 1959, pp. 1114-29.
- CARSON, D. Bank earnings and the competition for savings deposits. *Jour. Pol. Econ.*, Dec. 1959, pp. 580-88.
- CRAMP, A. B. Horsley Palmer on bank rate. *Economica*, Nov. 1959, pp. 341-49.
- DE JONG, F. J. El concepto del equilibrio monetario y su relación con la economía postkeynesiana. *Rev. de Econ. Pol.*, Apr. 1959, pp. 24-67.

- DOODHA, K. D. Bank financing of consumer instalment credit. *Indian Econ. Jour.*, July 1959, pp. 74-93.
- GOODE, R. AND BIRNBAUM, E. A. The relation between long-term and short-term interest rates in the United States. *Internat. Mon. Fund Staff Papers*, Oct. 1959, pp. 224-43.
- GUADAGNINI, R. La Federal Reserve e il mercato del denaro negli Stati Uniti. (With English summary.) *Riv. Internaz. di Sci. Econ. e Com.*, Oct. 1959, pp. 939-50.
- HAMOIR, E. Le franc et sa valeur. *Vie Écon. et Soc.*, Nov. 1959, pp. 313-25.
- HART, A. G. Shackle's system and the theory of liquidity preference and of money. *Metroeconomica*, Apr.-Aug. 1959, pp. 37-43.
- HEXNER, E. La convertibilité limitée selon les règles du Fonds Monétaire International. *Cahiers de l'Inst. de Sci. Écon. Appliquée*, no. 92, Oct. 1959, pp. 3-18.
- HIGONNET, R. Marx et la spéculation bancaire. *Cahiers de l'Inst. de Sci. Écon. Appliquée*, Oct. 1959, pp. 25-50.
- KNIGHT, H. M. A monetary budget. *Internat. Mon. Fund Staff Papers*, Oct. 1959, pp. 210-23.
- KUENNE, R. E. Patinkin on neo-classical monetary theory: a critique in Walrasian specifics. *So. Econ. Jour.*, Oct. 1959, pp. 119-24.
- LE BOURVA, J. La théorie de l'inflation, le rapport des experts et l'opération de décembre 1958. *Rev. Econ.*, Sept. 1959, pp. 713-54.
- LEPPO, M. Poliittinen vallankäyttö ja keskuspankin itsenäisyyskysymys inflaation torjuntaan kohdistuvassa talouspolitiikassa. (With English summary.) *Kansantaloudellinen Aikakauskirja*, 1959, 3, pp. 200-20.
- MÄRZ, E. Die historischen Voraussetzungen des Credit-Mobilier-Bankwesens in Österreich. *Schmollers Jahrb.*, 1959, 79 (5), pp. 61-76.
- MATHEW, E. T. Commercial banks and rural credit. *Asian Econ. Rev.*, Aug. 1959, pp. 387-98.
- MYERS, M. G. The attempted nationalization of banks in Australia, 1947. *Econ. Record*, Aug. 1959, pp. 170-86.
- OSBORN, E. Liquidity in the banking system of the Federation of Rhodesia and Nyasaland, 1954 to 1958. *So. Afr. Jour. Econ.*, Sept. 1959, pp. 193-202.
- PATHAK, H. N. Money, banking and credit in New Zealand. *Indian Econ. Jour.*, July 1959, pp. 44-61.
- POLIT, G. Algunas conclusiones de la experiencia Belgo-Alemana en relación con la liquidez. *Investigacion Econ.*, 1959, 19 (3), pp. 519-32.
- ROOSA, R. V. The Radcliffe Report. *Lloyds Bank Rev.*, Oct. 1959, pp. 1-13.
- SINGH, M. Monetary policy in an inflationary economy. *Indian Econ. Jour.*, July 1959, pp. 28-43.
- SMITH, W. L. Financial intermediaries and monetary controls. *Quart. Jour. Econ.*, Nov. 1959, pp. 533-53.
- SPRINKEL, B. W. Monetary growth as a cyclical predictor. *Jour. Finance*, Sept. 1959, pp. 333-46.
- TAKATA, Y. On the independence of central bank. *Bull. Univ. Osaka Prefecture*, 1959, 3, pp. 33-46.
- WERBOFF, L. L. The effects of instalment credit term variation. *Jour. Finance*, Sept. 1959, pp. 379-89.
- Construction and mortgage credit. *Fed. Res. Bull.*, Sept. 1959, pp. 1091-96.
- Radcliffe Report: papers by R. Harrod, J. S. G. Wilson and A. I. Bloomfield. *Westminster Bank Rev.*, Nov. 1959, pp. 1-20.

Public Finance; Fiscal Policy

- ADLER, N. Federal-state cooperation in the administration of the income tax—the Wisconsin experience. *Nat. Tax Jour.*, Sept. 1959, pp. 193-203.

- AINSWORTH, K. G. Impact of grants-in-aid upon industry. *Am. Jour. Econ. Soc.*, Oct. 1959, pp. 27-43.
- BARATZ, M. S. AND FARR, H. T. Is municipal finance fiscally perverse? *Nat. Tax Jour.*, Sept. 1959, pp. 276-84.
- BOETTCHER, C. Zur Problematik der Besteuerung des Gewinns einerseits und der Ausschüttungen bzw. Entnahmen andererseits. *Finanzarchiv*, 1959, 20 (1), pp. 143-50.
- BÜHLER, O. Über einige Prinzipien des internationalen Steuerrechts. *Finanzarchiv*, 1959, 20 (1), pp. 151-63.
- CORNICK, P. Property tax and housing. *Am. Jour. Econ. Soc.*, Oct. 1959, pp. 17-25.
- FRANK, M. Réflexions sur une réforme de la fiscalité en Belgique. *Cahiers Econ. de Bruxelles*, Jan. 1959, pp. 277-320.
- GEERTMAN, J. A. Comparaison des régimes fiscaux néerlandais et belges, du point de vue de leur incidence sur l'économie de l'entreprise. *Annales de Sci. Econ. Appliquées*, Oct. 1959, pp. 459-78.
- GIORGETTI, A. Legittimazione e produttività della spesa pubblica. (With English summary.) *Risparmio*, Sept. 1959, pp. 1359-70.
- HALLER, H. Bemerkungen zur progressiven Besteuerung und zur steuerlichen Leistungsfähigkeit. *Finanzarchiv*, 1959, 20 (1), pp. 35-57.
- HANSEN, B. Stadsbudgetens verkningar. (The effects of the state budget.) *Ekon. Tids.*, Sept. 1959, pp. 128-45.
- HARRIS, J. P. Legislative control of expenditure: the Public Accounts Committee of the British House of Commons. *Can. Pub. Admin.*, Sept. 1959, pp. 113-31.
- HAX, K. Unternehmerhaltung und Gewinnbesteuerung. *Finanzarchiv*, 1959, 20 (1), pp. 102-14.
- HÜBSCHMANN, W. Die Mitarbeit von Wirtschaftsorganisationen im Rahmen des deutschen Steuerwesens. *Finanzarchiv*, 1959, 20 (1), pp. 133-42.
- Ito, H. New facts and figures on Japanese public finance. *Annals Hitotsubashi Acad.*, Aug. 1959, pp. 1-20.
- JECHT, H. Der Problemkreis "Besteuerung und Wirtschaftspolitik" in der deutschen finanzwissenschaftlichen Literatur. *Finanzarchiv*, 1959, 20 (1), pp. 5-22.
- KLEIN, F. Grundgesetz und Steuerreformen. *Finanzarchiv*, 1959, 20 (1), pp. 115-32.
- MALEZIEUX, R. Quelques aspects des problèmes fiscaux du Marché commun. *Rev. Sci. Fin.*, Oct.-Dec. 1959, pp. 610-29.
- MERRIAM, R. E. Federal fiscal policy: its impact on local government finance. *Mun. Fin.*, Aug. 1959, pp. 10-16.
- MISHAN, E. J. AND DICKS-MIREAUX, L. A. Imposición progresiva en una economía inflacionaria. *Investigacion Econ.*, 1959, 19 (3), pp. 441-56.
- MOSS, J. Tax burdens in common market countries. *Nat. Tax Jour.*, Sept. 1959, pp. 216-31.
- OLDMAN, O. AND TEMPLE, R. Etude comparée de l'imposition des personnes mariées. *Rev. Sci. Fin.*, Oct.-Dec. 1959, pp. 551-74.
- PLUMB, W. T., JR. The priorities of federal taxes over state and local taxes. *Nat. Tax Jour.*, Sept. 1959, pp. 204-15.
- PREST, A. R. The expenditure tax and saving. *Econ. Jour.*, Sept. 1959, pp. 483-89.
- ROBINSON, W. C. Financing of federal authorities. *Am. Jour. Econ. Soc.*, Oct. 1959, pp. 45-63.
- SCHMÖLDERS, G. "Unmerkliche" Steuern. *Finanzarchiv*, 1959, 20 (1), pp. 23-34.
- SHOUP, C. S. Some implications for public finance in Shackle's expectation analysis. *Metroeconomica*, Apr.-Aug. 1959, pp. 89-103.
- . The theory of public finance (review article). *Am. Econ. Rev.*, Dec. 1959, pp. 1018-29.
- SMITH, E. K. Massachusetts personal income tax revision. *Nat. Tax Jour.*, Sept. 1959, pp. 239-59.

- SOULE, D. M. Shifting of the corporate income tax: a dynamic analysis. *Jour. Finance*, Sept. 1959, pp. 390-402.
- STUCKEN, R. Unterschiede bei der Rücklagen- und Schuldenpolitik des Staates und der Gemeinden. *Finanzarchiv*, 1959, 20 (1), pp. 93-101.
- TIMM, H. Ein vernachlässigtes Problem finanzpolitischer Sparförderung. *Finanzarchiv*, 1959, 20 (1), pp. 58-73.
- The federal budget. Articles by M. H. Stans, S. M. Cohn, L. H. Noble, J. A. Miller. *Fed. Accountant*, Sept. 1959, pp. 5-69.
- Government expenditures and inflation: five articles by M. H. Stans, G. Colm, G. Meany, H. Perry and C. M. Shanks, *Annals Am. Acad. Pol. Soc. Sci.*, Nov. 1959, pp. 19-54.
- Taxation as a curb on inflation: six articles by H. M. Groves, M. R. Gainsbrugh and J. F. Gaston, E. P. Schmidt, J. F. Due, P. G. Craig, L. H. Kimmel. *Annals Am. Acad. Pol. Soc. Sci.*, Nov. 1959, pp. 55-100.

International Economics

- AMUZEGAR, J. Foreign technical assistance: sense and nonsense. *Soc. Research*, Autumn 1959, pp. 253-71.
- AUBREY, H. G. Sino-Soviet aid to South and Southeast Asia. *World Pol.*, pp. 62-70.
- BABA, K. Balance of trade and economic growth in Japan. *Annals Hitotsubashi Acad.*, Aug. 1959, pp. 37-63.
- BEHRMAN, J. H. State trading by underdeveloped countries. *Law and Contemp. Problems*, Summer 1959, pp. 454-81.
- BHAGWATI, J. Growth, terms of trade and comparative advantage. *Econ. Internaz.*, Aug. 1959, pp. 393-414.
- BLACK, J. Arguments for tariffs. *Oxford Econ. Papers*, June 1959, pp. 191-208.
- BRAINARD, H. G. Present-day applications of Graham's theory of international values. *Rev. Soc. Econ.*, Sept. 1959, pp. 126-35.
- BREIER, F. A. Multilatéralisme, contrôle des changes et balance des paiements dans la politique économique des Etats-Unis. *Cahiers de l'Inst. de Sci. Econ. Appliquée*, no. 92, Oct. 1959, pp. 171-83.
- DE FONZO, F. Il diritto di stabilimento nella Comunità economica europea. *Riv. di Pol. Econ.*, Oct. 1959, pp. 1574-88.
- DELIVANIS, D. Y. Croissance et importations d'une région sous-développée. *Cahiers de l'Inst. de Sci. Econ. Appliquée*, no. 92, Oct. 1959, pp. 47-74.
- DE LOVINOSSE, H. Belgique, Benelux et Marché commun. *Annales de Sci. Econ. Appliquées*, Oct. 1959, pp. 365-85.
- DE NARDO, V. Variazioni monetarie e tributi—effetti sul mercato internazionale. *Riv. di Pol. Econ.*, Aug.-Sept. 1959, pp. 1411-36.
- FAUVEL, L. Disparité de prix et volume relatif des échanges: l'effet des fluctuations de change entre 1929 et 1939. *Cahiers de l'Inst. Sci. Econ. Appliquée*, May 1959, pp. 1-26.
- FENSTERWALD, B., JR. United States policies toward state trading. *Law and Contemp. Problems*, Summer 1959, pp. 369-97.
- GALAN, J. M. La estructura del mercado de cereales en la Comunidad Económica Europea. *De Economía*, July-Aug. 1959, pp. 671-88.
- GARCÍA REYNOSO, P. Dos conferencias sobre el mercado común latinoamericano. *El Trimestre Econ.*, Oct.-Dec. 1959, pp. 541-60.
- GAST, G. Finanzpolitische Probleme des Gemeinsamen Marktes. *Finanzarchiv*, 1959, 20 (1), pp. 164-79.
- HACKETT, J. W. Taux de développement interne et balance extérieure. *Cahiers de l'Inst. Sci. Econ. Appliquée*, May 1959, pp. 1-21.
- HERCEG, K. L. Scambi oriente-occidente e integrazione europea. *Riv. di Pol. Econ.*, Nov. 1959, pp. 1780-91.

- HOFMANN, W. *Marché Commun et concurrence*. Cahiers de l'Inst. de Sci. Écon. Appliquée, no. 92, Oct. 1959, pp. 113-56.
- HOLLERMAN, L. The interpretation and use of Japanese foreign trade statistics. *Econ. Develop. and Cult. Change*, Oct. 1959, pp. 69-78.
- HOLZER, M. Die Freizügigkeit der Unternehmungen und der Arbeit. *Aussenwirtschaft*, Sept. 1959, pp. 250-65.
- INGRAM, J. C. State and regional payments mechanisms. *Quart. Jour. Econ.*, Nov. 1959, pp. 619-32.
- JOHNSON, H. G. Vers une théorie générale de la balance des paiements. Cahiers de l'Inst. Sci. Écon. Appliquée, May 1959, pp. 1-12.
- KEMP, M. C. Depreciation in disequilibrium. *Can. Jour. Econ. Pol. Sci.*, Nov. 1959, pp. 431-38.
- LANDAU, G. D. Considerations of an international administrative service. *Econ. Develop. and Cult. Change*, Oct. 1959, pp. 48-68.
- MARCY, G. Libération progressive des échanges et aide à l'exportation en France depuis 1949. Cahiers de l'Inst. Sci. Écon. Appliquée, May 1959, pp. 1-20.
- MASNATA, A. Les Etats-Unis et l'économie mondiale—échanges commerciaux et investissements à l'étranger. Cahiers de l'Inst. de Sci. Écon. Appliquée, no. 92, Oct. 1959, pp. 157-70.
- MEYER, F. V. The terms of trade of manufactures. *Econ. Jour.*, Sept. 1959, pp. 507-21.
- MIKESELL, R. F. AND WELLS, D. A. State trading in the Sino-Soviet bloc. *Law and Contemp. Problems*, Summer 1959, pp. 435-53.
- MORGAN, T. Long-run terms of trade between agriculture and manufacturing. *Econ. Develop. and Cult. Change*, Oct. 1959, pp. 1-23.
- NURKSE, R. Le commerce des pays sous-développés et les conditions internationales de croissance. Cahiers de l'Inst. de Sci. Écon. Appliquée, no. 92, Oct. 1959, pp. 19-46.
- ORLOV, N. The foreign trade of the Soviet Union under present conditions. *Prob. Econ.*, Sept. 1959, pp. 26-33.
- OUTIN, M. State trading in Western Europe. *Law and Contemp. Problems*, Summer 1959, pp. 398-419.
- PATEL, S. J. Export prospects and economic growth: India. *Econ. Jour.*, Sept. 1959, pp. 490-506.
- PAZOS, F. La protezione doganale come politica di sviluppo economico. (With English summary.) *Mondo Aperto*, Oct. 1959, pp. 341-60.
- PENGGLAU, C. La liquidation de l'Union européenne de paiements et l'accord monétaire européen. *Rev. Econ.*, Sept. 1959, pp. 755-83.
- PIZER, S. AND CUTLER, F. U.S. industry expands investment abroad. *Surv. Curr. Bus.*, Oct. 1959, pp. 16-20.
- RIGOTARD, J. De l'union française à la communauté. *Rev. d'Écon. Pol.*, July-Oct. 1959, pp. 477-540.
- RIOND, G. La nuova Comunità francese: struttura politico-costituzionale ed aspetti economici. *Riv. di Pol. Econ.*, Nov. 1959, pp. 1761-79.
- SALTER, W. E. G. Internal and external balance—the role of price and expenditure effects. *Econ. Record*, Aug. 1959, pp. 226-38.
- SHARRON, A. O. Japanese consumption, external disequilibrium and their statistical measurement. *Rev. Soc. Econ.*, Sept. 1959, pp. 136-50.
- SPULBER, N. The Soviet-bloc foreign trade system. *Law and Contemp. Problems*, Summer 1959, pp. 420-34.
- TINBERGEN, J. Fines y medios de una política económica internacional. *Dè Economía*, July-Aug. 1959, pp. 635-44.
- TSIANG, S. C. Fluctuating exchange rates in countries with relatively stable economies: some European experiences after World War I. *Internat. Mon. Fund Staff Papers*, Oct. 1959, pp. 244-73.

- UCHIDA, K. Trading commerce between Japan and the sterling area in the post-war periods. *Bull. Univ. Osaka Prefecture*, 1959, 3, pp. 85-102.
- UZAWA, H. Prices of the factors of production in international trade. *Econometrica*, July 1959, pp. 448-68.
- VON BÖVENTER, E. The production elasticity of U.S. raw material imports. *Econ. Internaz.*, Aug. 1959, pp. 470-91.
- WEILLER, J. Flexibilité ou fluctuation des changes? Rappel des effets de change constatés au cours de l'expérience française des années 1919-1929. *Cahiers de l'Inst. Sci. Écon. Appliquée*, May 1959, pp. 1-13.
- YEAGER, L. B. The misconceived problem of international liquidity. *Jour. Finance*, Sept. 1959, pp. 347-60.
- The U.S. balance of payments, 1958-59. *Fed. Res. Bull.*, Oct. 1959, pp. 1235-41.

Business Finance; Investment and Security Markets; Insurance

- ANDREWS, V. L. Pension funds in the securities markets. *Harvard Bus. Rev.*, Nov.-Dec. 1959, pp. 90-102.
- BARKER, C. A. Price changes of stock-dividend shares at ex-dividend dates. *Jour. Finance*, Sept. 1959, pp. 373-78.
- CHATTERJEE, P. Joint-stock companies in a socialist pattern of society—an economic interpretation. *Asian Econ. Rev.*, Aug. 1959, pp. 399-414.
- KENADJIAN, B. AND DERRICKSON, G. F. Business financing in 1959. *Surv. Curr. Bus.*, Oct. 1959, pp. 11-15+.
- REITANO, P. Autofinanziamento e fluttuazioni cicliche. *Riv. di Pol. Econ.*, Nov. 1959, pp. 1733-59.
- VERSTRAETEN, L. De gemeenschappelijke beleggingsfondsen (II). (With English summary.) *Tijdschrift v. Econ.*, 1959, 4 (3), pp. 349-66.
- WILSON, T. Equities and growth. *Lloyds Bank Rev.*, Oct. 1959, pp. 14-31.
- Symposium on the Securities and Exchange Commission. *Geo. Wash. Law Rev.*, Oct. 1959, pp. 1-391.

Business Organization; Managerial Economics; Marketing; Accounting

- CHAPUT-AUQUIER, G. La valeur économique du travail ménager. *Cahiers Econ. de Bruxelles*, July 1959, pp. 593-600.
- EVANS, F. B. Psychological and objective factors in the prediction of brand choice: Ford versus Chevrolet. *Jour. Bus.*, Oct. 1959, pp. 340-69.
- FITCH, W. C. Depreciation on mass properties—an application of statistical concepts. *N.A.A. Bull.*, Dec. 1959, pp. 39-50.
- GAMBLE, F. R. Advertising agency costs & profits. *Harvard Bus. Rev.*, Nov.-Dec. 1959, pp. 103-12.
- HAYNES, W. W. Towards a general approach to organization theory. *Jour. Acad. Manag.*, Aug. 1959, pp. 75-88.
- JUNG, A. F. Price variations among automobile dealers in Chicago, Illinois. *Jour. Bus.*, Oct. 1959, pp. 315-25.
- MCCLELLAND, W. G. Pricing for profit in retailing. *Jour. Indus. Econ.*, July 1959, pp. 159-74.
- SOLDOSKY, R. M. Accountant's vs. economist's concepts of break-even analysis. *N.A.A. Bull.*, Dec. 1959, pp. 5-18.
- SWEARER, H. R. Khrushchev's revolution in industrial management. *World Pol.*, Oct. 1959, pp. 45-61.

- TAPLIN, W. Advertising appropriation policy. *Economica*, Aug. 1959, pp. 227-39.
- VAN LIERDE, P. A. Price-level changes and capital consumption allowances. *Jour. Bus.*, Oct. 1959, pp. 370-82.
- WIEBE, R. H. The House of Morgan and the executive, 1905-1913. *Am. Hist. Rev.*, Oct. 1959, pp. 49-60.
- WOODS, R. S. Theory and practice in the capitalization of selling costs. *Accounting Rev.*, Oct. 1959, pp. 564-69.

Industrial Organization; Government and Business; Industry Studies

- ALLEMANN, H. Die Verwirklichung der Konzeption des "Möglichen Wettbewerbs" im Schweizerischen Kartellgesetzentwurf. *Wirtschaft und Recht*, 1959, 11 (3), pp. 145-62.
- ALPERT, S. B. Economy of scale in the metal removal industry. *Jour. Indus. Econ.*, July 1959, pp. 175-81.
- CHURCHILL, B. C. Size of business firms. *Surv. Curr. Bus.*, Sept. 1959, pp. 14-20.
- CLARK, C. D. AND OLSEN, B. M. Technological change in the textile industry. *So. Econ. Jour.*, Oct. 1959, pp. 125-33.
- COASE, R. H. The Federal Communications Commission. *Jour. Law and Econ.*, Oct. 1959, pp. 1-40.
- DENNISON, S. R. The British Restrictive Trade Practices Act of 1956. *Jour. Law and Econ.*, Oct. 1959, pp. 64-83.
- DUE, J. F. An empirical study of abandonment decisions. *Jour. Finance*, Sept. 1959, pp. 361-72.
- ECHIGO, K. Development of postwar Japanese shipbuilding industry and revival of monopoly. *Kyoto Univ. Econ. Rev.*, Oct. 1958, pp. 35-58.
- FOURAKER, L. E. Trouble in the technique industry. *Jour. Bus.*, Oct. 1959, pp. 327-39.
- GIGER, H. G. Eine rechtliche Würdigung des Kartellgesetzentwurfes. *Wirtschaft und Recht*, 1959, 11 (3), pp. 163-78.
- HANSEN, V. R. The administration of federal antitrust laws. *Antitrust Bull.*, May-June 1959, pp. 427-38.
- KHALFINA, E. The state enterprise under the new conditions of industrial management. *Prob. Econ.*, Sept. 1959, pp. 39-43.
- LEVIN, H. J. Broadcast regulation and intermedium competition. *Virginia Law Rev.*, Nov. 1959, pp. 1104-35.
- LYTTON, H. D. Recent productivity trends in the federal government: an exploratory study. *Rev. Econ. Stat.*, Nov. 1959, pp. 341-59.
- SHARP, C. H. The allocation of goods traffic between road and rail. *Jour. Indus. Econ.*, July 1959, pp. 206-12.
- SINGH, P. The monopoly problem: its implications in India. *Indian Jour. Econ.*, Oct. 1958, pp. 183-90.
- SPINELLI, A. P. Nuestra legislación represiva de los monopolios y las nuevas formas de organizacion de la produccion. (With English summary.) *Económica*, July 1956-June 1957, pp. 19-62.
- STOCKING, G. W. Economic change and the Sherman Act: some reflections on "workable competition." *Antitrust Bull.*, May-June 1959, pp. 375-425.
- TAUBMAN, J. Pools, combinations, conspiracies and joint ventures. *Antitrust Bull.*, May-June 1959, pp. 341-73.
- WESTWOOD, J. N. Soviet railway development. *Soviet Stud.*, July 1959, pp. 22-48.
- WOOD, H. R. The measurement of employment cost and prices in the steel industry. *Rev. Econ. Stat.*, Nov. 1959, pp. 412-18.

Land Economics; Agricultural Economics; Economic Geography; Housing

- BILIMOVICH, A. D. Concentration of agriculture in the United States. *Econ. Internaz.*, Aug. 1959, pp. 495-527.
- BREWSTER, J. M. Long run prospects of Southern agriculture. *So. Econ. Jour.*, Oct. 1959, pp. 134-40.
- COCHRANE, W. W. Some further reflections on supply control. *Jour. Farm Econ.*, Nov. 1959, pp. 697-717.
- COUTIN, P. La politique agricole de la V^e République. *Rev. Econ.*, Sept. 1959, pp. 784-92.
- CROMARTY, W. A. An econometric model for United States agriculture. *Jour. Am. Stat. Assoc.*, Sept. 1959, pp. 556-74.
- FEROLDI, F. Politica congiunturale e politica degli investimenti con riguardo all'edilizia residenziale. (With English summary.) *Riv. Internaz. di Sci. Econ. e Com.*, Oct. 1959, pp. 905-20.
- HALLETT, G. The economic position of British agriculture. *Econ. Jour.*, Sept. 1959, pp. 522-39.
- HEADY, E. O. AND EGBERT, A. C. Programming regional adjustments in grain production to eliminate surpluses. *Jour. Farm Econ.*, Nov. 1959, pp. 718-33.
- KAHAN, A. Changes in labor inputs in Soviet agriculture. *Jour. Pol. Econ.*, Oct. 1959, pp. 451-62.
- MCCARTY, H. H. Toward a more general economic geography. *Econ. Geog.*, Oct. 1959, pp. 283-89.
- MILLIMAN, J. W. Water law and private decision-making: a critique. *Jour. Law and Econ.*, Oct. 1959, pp. 41-63.
- PARSONS, K. H. Land reform in the United Arab Republic. *Land Econ.*, Nov. 1959, pp. 319-26.
- PERSHIN, P. On the means of drawing collective farm-cooperative property closer to property belonging to the whole people. *Prob. Econ.*, Sept. 1959, pp. 10-19.
- SCOTT, P. The Australian CBD. *Econ. Geog.*, Oct. 1959, pp. 290-314.
- SOSNOVY, T. The Soviet housing situation today. *Soviet Stud.*, July 1959, pp. 1-21.
- STEINER, P. O. Choosing among alternative public investments in the water resource field. *Am. Econ. Rev.*, Dec. 1959, pp. 893-916.
- STOLTENBERG, C. H. An investment-opportunity approach to forestry programming. *Jour. Forestry*, Aug. 1959, pp. 547-550.
- SWANSON, E. R. Research in the economics of the agricultural firm. *Nationalsk. Tids.*, 1959, 97 (3-4), pp. 155-64.
- VASILYEV, P. V. Prospects for industrial consumption of wood and for development of forest economy in U.S.S.R. under seven-year plan, 1959-1965. *Jour. Forestry*, Nov. 1959, pp. 818-821.
- 1959 Survey of Consumer Finances: housing of nonfarm families. *Fed. Res. Bull.*, Sept. 1959, pp. 1097-1113.

Labor Economics

- ARNOW, P. The International Labor Conference of 1959. *Mo. Lab. Rev.*, Sept. 1959, pp. 977-82.
- BAYLISS, F. J. British wages councils and full employment. *Internat. Lab. Rev.*, Nov. 1959, pp. 410-29.
- BRITTAIN, J. A. A bias in the seasonally adjusted unemployment series and a suggested alternative. *Rev. Econ. Stat.*, Nov. 1959, pp. 405-11.

- DAHL, A. H. Lønstrukturen i Dansk industrisiden 1946. *Nationaløk. Tids.*, 1959, 97 (3-4), pp. 192-220.
- DE FALLEUR, R. La quantité de travail en Belgique (1948-1957). *Cahiers Econ. de Bruxelles*, Jan. 1959, pp. 247-76.
- , La rémunération horaire des salariés. *Cahiers Econ. de Bruxelles*, July 1959, pp. 563-92.
- DERWA, L. Essai de prévision de la quantité de travail en Belgique en 1960, 1965, 1970, 1975. *Cahiers Econ. de Bruxelles*, July 1959, pp. 511-28.
- FITZWILLIAMS, J. Employment in corporate and noncorporate production. *Surv. Curr. Bus.*, Nov. 1959, pp. 18-23.
- GORDON, M. S. The older worker and hiring practices. *Mo. Lab. Rev.*, Nov. 1959, pp. 1198-1205.
- JAMES, R. C. Labor mobility, unemployment, and economic change: an Indian case. *Jour. Pol. Econ.*, Dec. 1959, pp. 545-59.
- JOHNSON, D. B. Dispute settlement in atomic energy plants. *Indus. Lab. Rel. Rev.*, Oct. 1959, pp. 38-53.
- KANNAPPAN, S. The Tata steel strike: some dilemmas of industrial relations in a developing economy. *Jour. Pol. Econ.*, Oct. 1959, pp. 489-507.
- LIEBHAFSKY, E. E. A "new" concept in wage determination: disguised productivity analysis. *So. Econ. Jour.* Oct. 1959, pp. 141-46.
- MAZUMDAR, D. Underemployment in agriculture and the industrial wage rate. *Economica*, Nov. 1959, pp. 328-40.
- MCCORMICK, B. Labor hiring policies and monopolistic competition theory. *Quart. Jour. Econ.*, Nov. 1959, pp. 607-18.
- PENTLAND, H. C. The development of a capitalistic labour market in Canada. *Can. Jour. Econ. Pol. Sci.*, Nov. 1959, pp. 450-61.
- REDDAWAY, W. B. Wage flexibility and the distribution of labour. *Lloyds Bank Rev.*, Oct. 1959, pp. 32-48.
- REES, A. Do unions cause inflation? *Jour. Law and Econ.*, Oct. 1959, pp. 84-94.
- ROUTH, G. The relation between unemployment and the rate of change of money wage rates: a comment. *Economica*, Nov. 1959, pp. 299-315.
- WEBER, A. R. Competitive unionism in the chemical industry. *Indus. Lab. Rel. Rev.*, Oct. 1959, pp. 16-37.
- The Forty-third Session of the International Labour Conference, Geneva, June 1959. *Internat. Lab. Rev.*, Sept. 1959, pp. 203-35.
- Wages in agriculture, 1948-1957, *Internat. Lab. Rev.*, Nov. 1959, pp. 430-41.
- Wage negotiations and wage policies in Sweden: I, II. *Internat. Lab. Rev.*, Oct., Nov. 1959, pp. 319-30, 391-409.

Population; Welfare Programs; Standards of Living

- ANGENOT, L. H. J. Het Westen des lands. *De Economist*, Sept. 1959, pp. 577-612.
- BACHMURA, F. T. Man-land equalization through migration. *Am. Econ. Rev.*, Dec. 1959, pp. 1004-17.
- CHANDRASEKHAR, S. China's population problems: a report. *Population Rev.*, July 1959, pp. 3-38.
- , Population growth and food supply in India. *Pop. Rev.*, Jan. 1959, pp. 72-84.
- DESCHUYTENEER, L. Quelques aspects économiques de la Sécurité sociale. *Cahiers Econ. de Bruxelles*, Apr. 1959, pp. 427-96.
- GARBARINO, J. W. Price behavior and productivity in the medical market. *Indus. Lab. Rel. Rev.*, Oct. 1959, pp. 3-15.

- HUGHES, R. B., JR. Human fertility differentials: the influence of industrial-urban development on birth rates. *Population Rev.*, July 1959, pp. 58-69.
- MAYER, K. Fertility changes and population forecasts in the United States. *Soc. Research*, Autumn 1959, pp. 347-66.
- MINOGUCHI, T. Increasing populations and industrial structures. *Annals Hitotsubashi Acad.*, Aug. 1959, pp. 81-90.
- NEWTH, J. A. Two notes on population. *Soviet Stud.*, July 1959, pp. 49-60.
- PODIACHIKH, P. The population of the Soviet Union. *Prob. Econ.*, Sept. 1959, pp. 20-25.
- SAUVY, A. Repercusiones de los factores sociales y económicos sobre el crecimiento de la población. *Investigacion Econ.*, 1959, 19 (3), pp. 467-78.
- SPENCER, D. L. Population growth and foreign aid. *Pop. Rev.*, Jan. 1959, pp. 63-71.

Related Disciplines

- TULLOCK, G. Problems of majority voting. *Jour. Pol. Econ.*, Dec. 1959, pp. 571-79.

NOTES

George W. Stocking, of Vanderbilt University, has been appointed chairman of the American Economic Association nominating committee. Suggestions for officers of the Association in 1961 should be sent to him as early as possible.

John Perry Miller, editor of the forthcoming *Cumulative Index to Economic Periodical Articles in the English Language 1886-1959*, is now editing author entries and would like to have the correct form of names that have undergone change. Such changes—for example, married women who have published under maiden names, "juniors" that have been dropped, variant spellings—should be sent to Mrs. Dorothy F. Livingston, Yale University Library, New Haven, Connecticut.

THE ECONOMICS INSTITUTE FOR FOREIGN STUDENTS

In the summer of 1960 (June 27 to August 28) the third Economics Institute will be held at the University of Colorado with Wyn F. Owen as Director. The Economics Institute is designed to refresh and, where necessary, to supplement foreign member students' preliminary training in economics, English, and mathematics, so that they may begin their graduate studies on a basis more nearly comparable to that of students whose undergraduate training has been obtained in U.S. colleges or universities. The testing program of the Institute clearly reinforces the judgment of its founders that foreign students commonly begin graduate work in the United States at a very considerable handicap, and that this handicap goes beyond the matter of language. Even though the Institute in 1959 was attended predominantly by students who had been awarded scholarships for the regular academic year, only a small minority demonstrated subject-matter background of a quality likely to carry them through an initial semester of graduate work without academic difficulty.

The program is being administered by the Institute of International Education, with the guidance of an advisory board nominated by the American Economic Association. Current members of the board are Rendigs Fels, Carter Goodrich, Michael Hoffman, D. Gale Johnson, Irving Kravis, and Lorie Tarshis.

Information relating to student fellowships may be obtained from departmental chairmen and foreign student advisers.

1960 SURVEY OF CONSUMER FINANCES

The Survey Research Center of the University of Michigan is conducting the 1960 Survey of Consumer Finances with the support of private business and part of a \$300,000 grant from the Ford Foundation. Conducted annually since 1946, the Survey has previously been supported entirely by the Federal Reserve Board.

One part of the Ford Foundation grant is for the purpose of making Survey of Consumer Finances data more readily available to the academic world and more useful for tests of economic theory. An interuniversity facility, administered by an executive board, has been set up to prepare data from the annual Survey for research at other universities and to arrange a series of summer workshops for teachers and researchers. The first Summer Workshop on the Use of Consumer Survey Data will be held from July 18 to August 13, 1960.

The Center will also conduct a special study of low-income families next spring with support from the Ford Foundation, supplemented by the Office of Education and the Office of Vocational Rehabilitation.

BOOKS FOR ASIAN STUDENTS

The Asia Foundation would like to have donations for its Books for Asian Students program, now in its fourth year. Through this program, the Foundation has shipped more than a million books and almost a quarter million journals to universities and libraries in eighteen Asian countries. University, college and secondary level books (published after 1945) and scholarly, scientific and technical journals in series of five or more years are needed. The Foundation will pay transportation costs from the donor to San Francisco and thence to Asia. All shipments or questions concerning the program should be addressed to: Books for Asian Students, 21 Drumm Street, San Francisco 11, California.

Deaths

Arthur B. Adams, University of Oklahoma, August 10, 1959.

James H. Alphen, December 23, 1959.

Eugen Altschul, University of Kansas City, April 26, 1959.

Richard T. Bohan, United States Internal Revenue Service, July 21, 1959.

Bertram J. Cahn, August 11, 1959.

Ralph L. Dewey, Ohio State University, September 27, 1959.

Ralph C. Epstein, University of Buffalo, November 21, 1959.

Henry D. Locke, Liberty Mutual Insurance Company, October 18, 1959.

W. Rupert MacLaurin, Massachusetts Institute of Technology, August 17, 1959.

Marvel M. Stockwell, University of California, Los Angeles, December 15, 1959.

Retirements

John B. Condliffe, University of California, Berkeley, December 1958.

Paul F. Gemmill, Wharton School, University of Pennsylvania, June 1959.

Brantson B. Holder, Washington and Lee University, June 1959.

Carl Landauer, University of California, Berkeley, June 1959.

Benjamin F. Lemert, Duke University, Spring 1960.

Visiting Foreign Scholars

Michael Beesley, University of Birmingham: visiting associate professor of industry, Wharton School, University of Pennsylvania.

John R. Hicks, All Souls College, and Ursula K. Hicks, Nuffield College: lecturing at the University of California, Los Angeles, and visiting Stanford University and the University of California, Berkeley, March 1960, en route from Oxford to Japan to lecture at Osaka University.

Murray C. Kemp, McGill University: visiting associate professor of economics, Massachusetts Institute of Technology, 1959-1961.

Frederic Schreier: visiting professor of marketing, University of California, Los Angeles.

Ingvar Svennilson: visiting research professor of economics, Yale University.

Shitego Tsuru, Hitotsubashi University, Japan: visiting professor, Johns Hopkins University, first term, 1960-1961.

Leslie C. Wright, Edinburgh University: visiting Whitney professor economics, Rice Institute.

J. N. Wolfe, University of Toronto: visiting professor of economics, Purdue University.

Promotions

Morris A. Adelman: professor of economics, Massachusetts Institute of Technology.

Robert L. Ashenurst: associate professor of applied mathematics, Graduate School of Business and the Institute for Computer Research, University of Chicago, July 1960.

Edward C. Atwood, Jr.: associate professor of economics, Washington and Lee University.

A. J. Barkley: associate professor of economics, North Carolina State College.

Jean A. Crockett: associate professor of finance, Wharton School, University of Pennsylvania.

John L. Davidson: assistant professor of management and marketing, Louisiana State University.

Harold Demsetz: assistant professor of economics, University of Michigan.

Franklin B. Evans: assistant professor of marketing, Graduate School of Business, University of Chicago.

Paul J. FitzPatrick: ordinary professor of economics, Catholic University of America.

Arthur M. Freedman: assistant professor of finance, Wharton School, University of Pennsylvania.

Francis W. Gathof: assistant professor of economics, American University.

Bruce Glassburner: associate professor of economics, University of California, Davis.

Everett E. Hagen: professor of economics, Massachusetts Institute of Technology.

Reed R. Hansen: assistant professor of economics, School of Economics and Business, Washington State University.

Dominic N. Khactu: assistant professor of economics, Drake University.

R. V. Lesikar: professor of management and marketing, Louisiana State University.

Harold M. Levinson: professor of economics, University of Michigan.

Russell F. McDonald: instructor (research), Ohio State University.

S. L. McDonald: professor of finance, Louisiana State University.

Gerald M. Meier: professor of economics, Wesleyan University.

Sidney L. Miller: assistant professor of transportation, Wharton School, University of Pennsylvania.

Simon Naidel: professor of economics, American University.

Dick Netzer: assistant vice president, Federal Reserve Bank of Chicago.

Paul Pigors: professor of industrial relations, Massachusetts Institute of Technology.

Raymond P. Powell: associate professor of economics, Yale University.

James P. Quirk: assistant professor of economics, Purdue University.

Chester Rapkin: professor of finance and city planning, Wharton School, University of Pennsylvania.

Robert M. Reeser: instructor (teaching and research), Ohio State University.

Paul N. Rosenstein-Rodan: professor of economics, Massachusetts Institute of technology.

Rubin Saposnik: assistant professor of economics, Purdue University.

Ronald A. Shearer: assistant professor of economics, University of Michigan.

Abraham J. Siegel: associate professor of industrial relations, Massachusetts Institute of Technology.

Warren L. Smith: professor of economics, University of Michigan.

Benjamin H. Stevens: assistant professor of regional science, Wharton School, University of Pennsylvania.

Daniel B. Suits: professor of economics, University of Michigan.

Morton Zeman: supervisor, economic research section, IBM Corporation, New York City.

Administrative Appointments

Robert C. Beetham: director of program, United States Council, International Chamber of Commerce.

Allan M. Cartter: dean, Graduate School of Arts and Sciences, Duke University.

Joseph L. Fisher: president and executive director, Resources for the Future, Inc., succeeding Reuben G. Gustavson, who retired August 1959.

Curry W. Gillmore: promoted to director of statistics and economics, IBM Corporation, New York, N. Y.

Craufurd Goodwin: executive secretary, Commonwealth Studies Center, Duke University.

Floyd A. Harper: research director, Foundation For Voluntary Welfare, Burlingame, California.

John J. Hooker: head of department of economics, Catholic University of America.

Paul Keat: promoted to supervisor of the Statistics Section, IBM Corporation, New York, N. Y.

H. T. Koplin: acting director, Honors College, University of Oregon.

Francis J. Lacy: associate survey director, Opinion Research Corporation.

David W. MacEachron: assistant manager, Intergovernmental Economic Affairs Department, California Texas Oil Corporation.

Stuart L. Mandell: head of department of economics and management, Lowell Technological Institute.

Dan M. McGill, Wharton School, University of Pennsylvania: executive director, S. S. Huebner Foundation for Insurance Education.

S. Sterling McMillan, Western Reserve University: secretary-treasurer, Reliable Spring and Wire Forms Company.

John L. O'Donnell: assistant director, Bureau of Business and Economic Research, Michigan State University.

Richard Ruggles: chairman, department of economics, Yale University.

Kenneth P. Sanow: promoted to program director, Industry Surveys, National Science Foundation, Washington, D.C.

Sheldon Schaffer, Metals Division, Olin Mathieson: manager of industrial economics, Southern Research Institute, Birmingham, Alabama.

Arthur Smithies: chairman, department of economics, Harvard University.

Jack Stieber: director of the Labor and Industrial Relations Center, Michigan State University, and professor of economics.

Frank T. Stockton: executive secretary, Kansas State Interdepartmental Committee on Aging.

Ben B. Sutton: vice president, Apache Oil Corporation.

Ernst W. Swanson: professor and head of department of economics, North Carolina State College.

Fred R. Yoder, Washington State University: chairman, Division of Social Sciences, Campbellsville College, Kentucky.

Appointments

Wroe Alderson: professor of marketing, Wharton School, University of Pennsylvania.

Jakangir Amuzigar, Occidental College: Brookings research professor, 1960-1961.

Dole A. Anderson: professor and advisor, ICA-Michigan State University project to organize School of Business Administration, University of Bahia.

Robert Armstrong: lecturer in economics and business administration, Geneva College.

Henry C. Aubrey: research fellow, Council on Foreign Relations.

Bela Balassa: assistant professor of economics, Yale University.

Morton S. Baratz, Bryn Mawr College: Brookings research professor, 1960-1961.

Donald S. Barnhart: lecturer in economics, Wharton School, University of Pennsylvania.

Howard Baumgarten: corporate economist, Crown Zellerbach Corporation.

Arthur A. Brennan, Jr.: instructor in statistics, Wharton School, University of Pennsylvania.

Robert L. Bunting: associate professor of economics, North Carolina State College.

Carl Campbell: assistant professor of economics, Whitman College.

Neil W. Chamberlain: professor of economics, Yale University.

William H. Chartener: economist, senior staff, Stanford Research Institute.

Manuel H. Chavez: instructor in insurance, Wharton School, University of Pennsylvania.

Arnold E. Crotty, University of North Carolina: instructor in accounting, School of Business Administration, University of Miami, Florida.

Paul G. Darling, Bowdoin College: Brookings research professor, 1960-1961.

Phillip Davidowitz: research associate, Harvard University Graduate School of Business Administration.

Dennis Davin: instructor in economics and business administration, Whitman College.

Frederick H. Ecker: professor of life insurance, Wharton School, University of Pennsylvania.

David Eiteman: assistant professor of finance, Graduate School of Business Administration, University of California, Los Angeles.

Stephen Enke: visiting professor of economics, Yale University.

Robert Evans, Jr.: assistant professor of industrial relations, department of economics, Massachusetts Institute of Technology.

Harry L. Franklin: department of economics, Georgetown University.

Herbert A. Goertz: instructor in economics, Yale University.

William Gomberg: professor of industry, Wharton School, University of Pennsylvania.

Fred M. Gotthell, Duke University: assistant professor of economics, University of Illinois.

Donald Grunewald: instructor, School of Business, University of Kansas.

William Henley: instructor in economics, North Carolina State College.

Bert G. Hickman, Brookings Institution: visiting lecturer in economics, University of California, Berkeley, spring semester.

Joseph W. Holcomb, Virginia Polytechnic Institute: economist, Battelle Memorial Institute.

John W. Hooper: instructor in economics, Yale University.

George D. Hughes: instructor in marketing, Wharton School, University of Pennsylvania.

William R. Hughes: instructor in economics, Harvard University.

Warren S. Hunsberger, University of Rochester: regional economist for Far East, International Cooperation Administration.

George Karatzas: instructor, University of Vermont.

Alfred Kraessel: professor of economics, Seton Hall University.

Arthur M. Kruger: assistant professor of industry, Wharton School, University of Pennsylvania.

John V. Leahy, III: instructor in statistics, Wharton School, University of Pennsylvania.

John C. Leary: economist, international finance division, Bureau of Economic Affairs, U. S. Department of State.

Charles L. Leven: assistant professor of economics and regional science, Wharton School, University of Pennsylvania.

Ta-Chung Liu: professor of political economy, Johns Hopkins University.

Stanley T. Lowry: assistant professor of economics, Washington and Lee University.

Paul W. MacAvoy: instructor in economics, Yale University.

Wilfred Malenbaum: professor of economics, Wharton School, University of Pennsylvania.

James L. Malone: lecturer in industry, Wharton School, University of Pennsylvania.

Duane F. Marble: assistant professor of regional science, Wharton School, University of Pennsylvania.

Nestor Marquez-Diaz: lecturer in economics, Loyola University.

Roger G. Mauldon: research associate, department of economics and sociology, Iowa State University (Ames).

Eugene C. McCann: instructor in management and marketing, and assistant to the dean, College of Business Administration, Louisiana State University.

Joseph J. Melone: instructor in insurance, Wharton School, University of Pennsylvania.

Morris Mendelson: visiting research associate, Harvard University Graduate School of Business Administration.

Glenn W. Miller, Ohio State University: visiting professor of economics, University of Arizona.

Thomas E. Miller: associate professor, School of Business, University of Kansas.

Roy E. Moor, Williams College: Brookings research professor, 1960-1961.

Roger Opdahl: instructor in economics and business administration, Geneva College.

Charles F. Phillips, Jr.: assistant professor of economics, Washington and Lee University.

Gerald A. Pinsky, Columbia University: instructor, Dartmouth College.

Harold L. Royer, Southwest Missouri State College: assistant professor of accounting, School of Business Administration, University of Miami, Florida.

Kenneth Schied: lecturer in industry, Wharton School, University of Pennsylvania.

Eugene W. Schooler: assistant professor of industry, Wharton School, University of Pennsylvania.

Don A. Seastone, University of Denver: assistant professor of economics, Colorado State University.

Franklin R. Shupp: instructor in operations research, department of economics, University of Illinois.

L. George Smith: assistant professor of general business administration, Arizona State University.

Paul F. Smith: associate professor of finance, Wharton School, University of Pennsylvania.

David Snell: assistant professor of finance, Graduate School of Business Administration, University of California, Los Angeles.

David Solomons: professor of accounting, Wharton School, University of Pennsylvania.

Benjamin P. Spiro: senior finance analyst, international economic group, Stanford Research Institute.

Case M. Sprenkle: instructor in economics, Yale University.

Neele E. Stearns: professor of business administration, and director of the executive program, Graduate School of Business, University of Chicago, February 1960.

Robert M. Stern: assistant professor of economics, Columbia College, Columbia University, not instructor as published in December 1959 number this *Review*.

William Stober: instructor in economics, North Carolina State College.

Herbert E. Striner, Johns Hopkins University: senior staff, Brookings Institution.

Paul Studenski: lecturer in Poland and Yugoslavia under Ford Foundation grant; now senior fiscal consultant, New York State Commission for Revision of the State Constitution.

Robert Summers: associate professor of economics, Wharton School, University of Pennsylvania.

Alister Sutherland: visiting instructor in economics, Wesleyan University.

Raymond D. Thomas: professor of economics and business administration, Drury College (not head of department of economics and business administration, as published in December 1959 number this *Review*).

B. E. Tsagris: assistant professor, division of business administration, Sacramento State College.

Luther G. Tweeten: research associate, department of economics, Iowa State University (Ames).

Stanislaw Wasowski, Duquesne University: economics department, Georgetown University.

Wilbur W. Widicus, Jr.: instructor, University of Vermont.

J. S. G. Wilson, London School of Economics: chair in economics and commerce, University of Hull.

Leaves for Special Appointments and Assignments

Edward Ames, Purdue University: visiting associate professor, Johns Hopkins University, 1959-1960.

Arthur M. Borak, University of Minnesota: University of Korea, 1959-1960.

Collin D. Campbell, Dartmouth College: tax economist, Brookings Institution's Korean Tax Advisory Group, 1959-1961.

John S. Chipman, University of Minnesota: Duke University, 1959-1960.

Bruce Glassburner, University of California, Davis: chairman, field staff, Indonesian economics project, University of California-University of Indonesia.

Bert G. Hickman, Brookings Institution: visiting lecturer, University of California, Berkeley, spring semester 1960.

Francis B. May, University of Texas: visiting professor, University of Minnesota, 1959-1960.

Lawrence S. Ritter, New York Federal Reserve Bank: staff of The Commission on Money and Credit, 1959-1960.

Wilson E. Schmidt, George Washington University: visiting professor of economic development, Institute on ICA Development Programming, School of Advanced International Studies, Johns Hopkins University.

Karl U. Smith, University of Minnesota: visiting professor of business administration, Indiana University, second semester 1959-1960.

Mervin G. Smith, Ohio State University: visiting professor, Iowa State University, (Ames), second semester 1959-1960.

John G. Turnbull, University of Minnesota: visiting professor of economics, Iowa State University (Ames), spring term.

Dilworth Walker, University of Utah: to head Institute of Public Administration, University of Tehran, 1960-1962.

L. Leslie Waters, Indiana University: Rose Morgan visiting professor, University of Kansas, second semester 1959-1960.

Stanislaw H. Wellisz, University of Chicago: visiting professor of economics, Warsaw School of Planning and Statistics, and seminars, University of Warsaw, winter quarter 1960.

Resignations

Paul Donham: Graduate School of Business Administration, Harvard University.

Harold J. Ecker: Ohio State University.

James J. Foley: Graduate School of Business Administration, Harvard University.

Laurent R. La Vallee: Whitman College.

Edward Rosenbaum: American University.

Paul A. Vatter: Wharton School, University of Pennsylvania.

Miscellaneous

William L. Doremus, New York University: national chairman, Advertising Teachers Committee, American Marketing Association.

Clifford Hildreth, Michigan State University: editor, *Journal of the American Statistical Association*.

Fritz Machlup: president, Southern Economic Association, 1959-1960.

M. G. Taylor, University of Toronto: president, Canadian Institute of Public Administration.

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